THE OIL WEEKLY

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The OIL WEEKLY
REFINER AND NATURAL GASOLINE MANUFACTURER

SPECIALIZED OIL JOURNALS
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The Oil Man's Calendar

MAR.	
21-25	Western Metal Congress, Biltmore Hotel, Los Angeles.
23-25	American Society of Mechanical Engineers, Los Angeles, Calif.
24-25	Southwestern District, A.P.I., Spring Meeting, Fort Worth, Texas.
APR.	
13-15	Petroleum Industry Electrical Association, Rice Hotel, Houston.
13-15	National Petroleum Association, Cleveland, Ohio.
14-15	A.P.I., Eastern District, Division of Production, William Penn Hotel, Pittsburgh, Pennsylvania.
19	A.P.I., Division of Production, Pacific Coast District, Spring Meeting, Biltmore Hotel, Los Angeles.
19	Western Petroleum Refiners Association, Hot Springs, Arkansas.
MAY	
6-12	American Gas Association, Natural Gas Department, New Orleans, La.
11-13	Natural Gasoline Association of America, Hotel Tulsa, Tulsa.
12-14	National Oil Scouts Association of America, Tulsa, Oklahoma.
14-21	International Petroleum Exposition, Tulsa, Oklahoma.
23-25	A.P.I., Mid-Year Meeting, Wichita, Kansas.
JUNE	
4	Illinois-Indiana Petroleum Association, Sixth Annual Conference, Robinson, Illinois.

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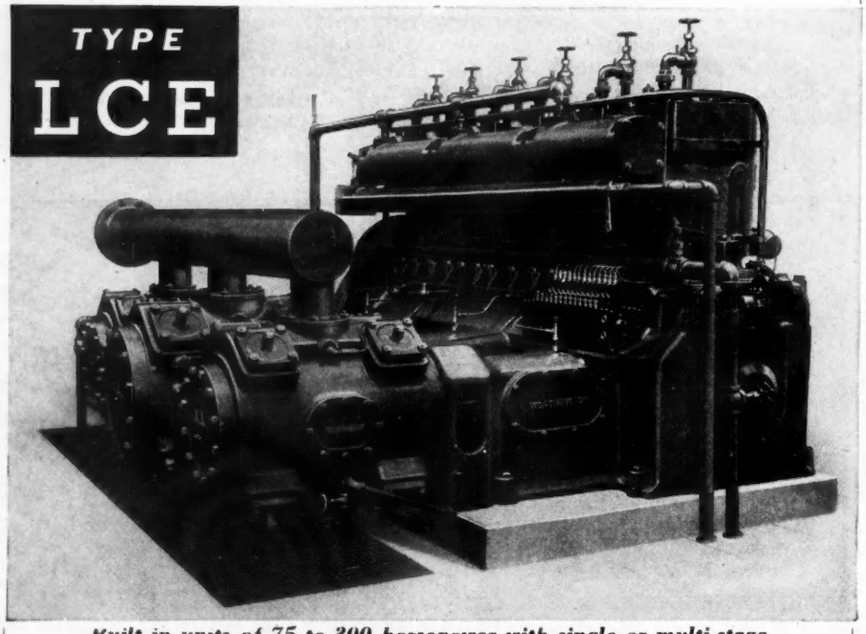

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LOOKING AHEAD

WITH THE EDITOR

Ark-La-Tex Territory Exceedingly Important . . .

LET'S SEE how smart you are. Don't read the rest of this column until you have answered the following questions.

What area last year drilled more wells than any other area in the United States?

What district contains one fifth of the estimated known unproduced crude reserves of the nation?

What region is expected to drill the most wells in 1938?

And which one is expected to put more wells on the pump than any other this year?

IF you are smarter than a flock of statisticians, your answer to all the above questions will be: the Ark-La-Tex district, which embraces East Texas, North Louisiana and South Arkansas, sometimes referred to as the Tri-State area.

FURTHERMORE, recent discoveries of new and deeper producing horizons causes this area to be looked upon as one of the most likely spots for additional crude reserves in the future. And that is exactly why the area will be given special editorial treatment next week in the

ARK-LA-TEX NUMBER
of
The OIL WEEKLY
March 28, 1938

A LARGE, three-color map of the area will be inserted in the Ark-La-Tex issue of THE OIL WEEKLY. And those of you afflicted with the filing bug in the matter of reference keeping will be glad to know that the general style of the issue, condensed histories of each field and all, will be patterned after the popular sectional issues of THE OIL WEEKLY on the Gulf Coast, Southwest Texas, Western Kansas and Western Texas-New Mexico.

BUT that, as Cap'n Henry says, is "only the beginning." Pictures there will be galore. Feature articles will trace the history, performance and record of the important fields of the area; they will talk about the prospects of the prospects. Other features will probe into geology and operating practices.

The changing panorama

AFTER 6 months of declining or unsteady oil prices, any little increase is distinctly encouraging. And so the advancing of gasoline prices ⅛ cent a gallon by some Mid-Continent refiners, on some grades, within the past 10 days has been definitely cheerful.

The gasoline market apparently has amply recognized the unusually large stocks of that material through the price declines of the past. And it now is in good position to react favorably to the spring increase in consumption, which already has manifested itself to some extent.

At least for the immediate future, therefore, the gasoline market promises to be firm, if not to improve.

Further Price Readjustments Needed

Nevertheless, there is considerable room for improvement. Gasoline prices, although they have improved slightly in the past few weeks, are still substantially lower than one year ago, at the refineries, as quoted to dealers, and at the service stations. For the United States as a whole, the tank car prices of regular grade gasoline are nearly 10 percent lower now than a year ago. This decline has occurred, moreover, in the face of general maintenance of crude oil prices at former levels. The profit possibilities of refiners consequently have been seriously circumscribed.

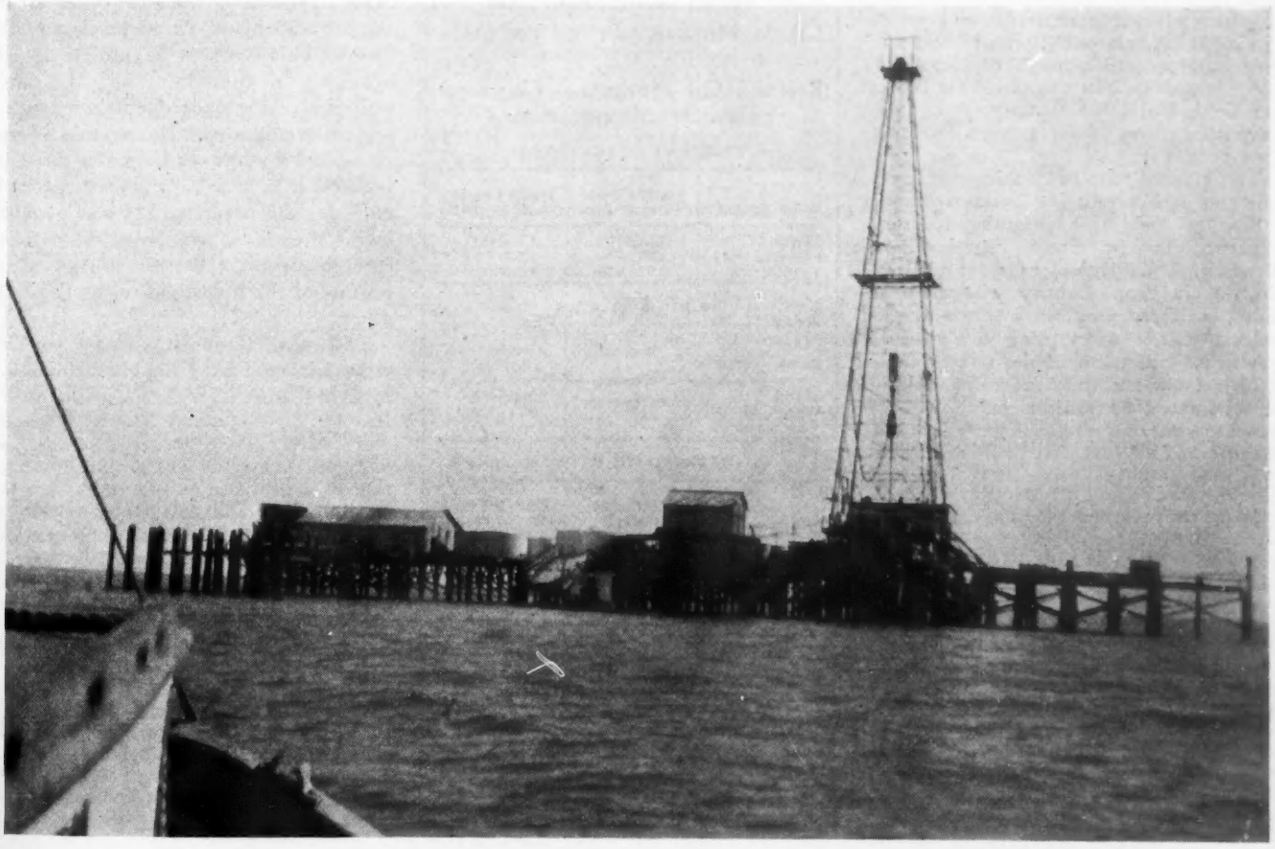
And until that margin between crude prices and gasoline prices is widened, the crude oil market will continue in danger. There will persist a tendency toward restoration of the former relationship, through a pulling down of the established crude postings, if not through a raising of the gasoline prices.

It would be to the advantage of the whole industry if the readjustment could be achieved in the latter way, rather than the former. And fortunately, the recent signs of improvement in the gasoline market offer hope that the crude market will win and eventually pull the gasoline market back up to its level.

Strict Regulation Still Required

If such a desirable alteration of the price situation is to be achieved, however, there must be in the next several months a continuation of strict crude oil pro-

First oil production in the open waters of the Gulf of Mexico became an actuality last week, when Superior Oil Company and Pure Oil Company completed a 10 barrel per hour well one mile offshore in Cameron Parish, Louisiana. The test, which drilled to 5100 feet, is located in about 14 feet of water. The companies propose to drill at least five more wells, all from the same pier usd in drilling the discovery test. **See page 75.**



duction control and better regulation of refinery operations than in the past.

The crude control program of the past several months has been particularly effective. But it has been only in recent weeks that desirable moderation in refinery activity has prevailed.

Evidence is at hand of continued lagging of petroleum consumption, because of the general business recession. And the less favorable demand requires that the oil industry must, to preserve orderly and stable markets, hold both crude production and refinery runs down accordingly.

Gasoline Stocks at New Peak

After rising in the week ended March 12 to a new all-time record of 93,084,000 barrels, gasoline stocks in the United States stood approximately 15 percent higher than on the corresponding date last year.

Such an increase over a year ago obviously is not justified, in view of the fact gasoline demand lately has been barely holding around the levels of last year.

The silver lining of the dark cloud in this instance was the fact that the increase of about 1 million barrels in the gasoline stocks in the week of March 12 was somewhat smaller than the addition in the corresponding week last year. This smaller increase reflected the more moderate refinery runs lately.

East Texas Crude Market Strengthened

The recent threat to the established $1.35 a barrel crude price in the East Texas field apparently has been diminished by virtue of the fact some of the larger purchasing companies have connected to additional wells. For this action has decreased the distressed movement of East Texas crude to the Gulf Coast.

In recent weeks some of the surplus crude had been loaded aboard tankers on the Texas coast for as much as 10 cents a barrel less than the regular f.o.b. ship price, embodying the field posting plus transportation costs.

This crisis in the East Texas crude market was largely a local matter, but of course had an indirect, depressing effect on the general Mid-Continent crude market.

It was brought about by a combination of circumstances, including the lagging demand for gasoline and resultant diminished requirements for the East Texas crude. The less favorable gasoline demand and lower gasoline prices forced numerous East Texas independent operators to shut down their plants, and they could no longer continue their crude oil takings.

The East Texas crude market also has been weakened by competition of other fields for the available market, particularly by fields from which crude could be moved to consumers with smaller transportation costs.

Drilling

A CHAMPAIGN County wildcat developed 1½ million cubic feet of gas, heralding a new Illinois gas field. The largest well yet completed in Benoist sand, 434 barrels daily, was brought in three-quarter miles north of Centralia.

A second well in the one-well Buckner field, Columbia County, Arkansas, gave indications of becoming a Permian lime producer.

The coastal part of Southwest Texas reported new producing horizons in the following fields: Plymouth, Keeran-Placedo, Turkey Creek, South Clara Driscoll, Agua Dulce, Luby and Stratton. A Jackson County wildcat near Edna indicated possibility of a new gas field. Another attempting a 2250-foot northeast extension of the new Maetze field in Goliad County blew out making an estimated 35 million cubic feet of gas and spraying 40 gravity crude while drilling at 5535 feet. North Sweden field in Duval County got its first 4500-foot Hockleyensis sand production.

Near the campus of Louisiana State University at Baton Rouge a wildcat cored Miocene oil sand. The first field in the Gulf of Mexico was opened when a wildcat a mile off shore showed for commercial production.

Fairbanks field, Texas Gulf Coast, received three major extensions, one southeast, one northeast and one east. A wildcat on Eureka prospect, near Houston's city limits, cored oil sand and prepared for a production test. The gap between Blue Basin and Withers fields in Wharton County was shortened by a producer.

Market briefs

Outlook — Improved by better tone of gasoline market.

Crude Markets—Prices continue to hold.

Refined Oil Markets — Gasoline prices tending to rise.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
March 12	3,382,100	3,100,000
Previous week	3,339,700	3,130,000
Year ago	3,372,850	2,985,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
March 5	304,527,000
Week ago	305,167,000
Year ago	289,611,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
March 12	93,084,000	122,818,000
Week ago	92,151,000	122,471,000
Year ago	81,236,000	98,964,000

DRILLING

Period	Wells Completed
Past week	422
Previous week	431
Year ago	480
Year Total:	
This year	5 422
Last year	5,495

Technology

METHODS for the Removal of Hydrogen Sulfide from Natural Gas in the State of Texas is the title of an article on page 20 by A. M. Crowell and Sol Smith. This work is beginning to gain headway in the state, but the rapid strides already made due to constant research over the past three years is well presented by the authors. In most instances, it is necessary for operators to consider the practicability and economics of their own particular case—therefore the interest in this subject which prompted the investigation by these engineers.

The normal incentives for drilling were analyzed by Joseph E. Pogue before the American Association of Petroleum Geologists at New Orleans last week, and his paper is presented on page 36, this issue. The recent abnormal rise in drilling rates is emphasized and attributed to the entry of new factors largely related to the manner in which proration functions. By projecting the drilling rate in Texas to 1942, Pogue arrives at the conclusion that there will be a steady decline in average allowables per well—which can be corrected by wider spacing.

The fourth installment of the series on crude reserves of the U.S.S.R. takes up the fields in Eastern Kura Plains, which differ somewhat from the previously discussed fields of the Apsheron Peninsula. You will find this article on page 47.

Oil in the Courts

Important decisions handed down on Texas spacing laws . . . Property subdivision and injunctions against commission rules clarified among others

TWO opinions by the Court of Civil Appeals at Austin last week added considerably to the bulk of "Rule 37," well spacing law of Texas, about which most attorneys' minds already are considerably confused. It was decided subdivision of property any time prior to the discovery of oil created vested rights, and that the Railroad Commission must be made a party to any lawsuit seeking to stop a drilling operation for which a permit has been issued.

Another Rule 37 development was an application filed with the Railroad Commission which requested adjustment of inequities created by concentrated offset drilling. Still another Texas legal decision of importance last week was the clarifying of the five-year statute of limitations on possession.

The attempt of the State of Texas to collect delinquent gasoline taxes by means of prior liens upon properties is to be decided by the Supreme Court, as result of an appeal filed last week. Considerable importance is attached to the suit.

Property subdivision

In the first case the court held that the so-called "voluntary subdivision" rule does not apply to subdivisions made prior to the discovery of oil in a given territory. This court, and the Supreme Court, heretofore has held that vested rights may not be created by the subdivision of a piece of property which is capable of development as a whole under Rule 37. Such a subdivision, the courts have said, is an evasion of the rule. This is believed to have had a normal effect at least toward cutting up of property in East Texas into numberless small tracts for the purpose of getting a permit to drill on an area less than the spacing pattern.

The principal question in connection with this subdivision rule had been when it became applicable. Rule 37 was first written in 1919, and many attorneys had construed the courts' possessive opinions as meaning any property subdivided since 1919 amounted to a subdivision in contravention of the rule.

This construction was emphatically rejected by Judge M. B. Blair. The facts in the case were that the heirs of Martha J. McNeely in 1922 partitioned a 68½-acre tract into four tracts of 17 acres, leaving a surplus of .53 acres. They occupied these tracts separately and when oil was discovered leased them separately. The sole question was whether the .53 acre surplus which they leased jointly was subdivided in contravention of the rule. Judge Blair said "the rule inhibiting 'voluntary subdivision' is operative only as to oil fields that have been discovered prior to the subdivision." In 1932 the legislature made a statute which provided in effect, "that the commission is without authority to restrict or in any manner limit the drilling of wells for the purpose of exploring for oil or gas in territory not known to produce either. Whether this act is expository, or to be considered as withdrawing the power to apply a spacing rule in a non-productive territory, is immaterial; under either view the commission would be without power to restrict wells. Judgment of the trial court affirmed."

Drilling permit suit

The other opinion was also written by Judge Blair. The ruling was to the effect that any lawsuit seeking to prevent the drilling of a well under a Railroad Commission permit must make the Railroad Commission a party defendant. Gulf Oil Corporation had obtained a temporary injunction restraining L. P. & B. Oil Corporation from drilling a second well on a two-acre tract. In dissolving the injunction and remanding the case for new trial, Judge Blair said:

"The trial court erred because Art. 6049c provides that no injunction relief shall be granted against the Railroad Commission 'to restrain it or them from enforcing any rule, regulation, or order made and promulgated under the oil and gas conservation laws of this state or any amendments thereto'; and also that no injunctive relief shall be granted except after notice and hearing.

"The commission is a necessary party to a suit to set aside an order granting a permit to drill an oil well as an exception to the rule. By numerous cases this court has held that the subject matter of an appeal complaining of an order of the commission is the order itself . . . It is therefore manifest that the legislature intended to give prima facie validity to every rule and to inhibit the granting of any injunctive relief against any statute or rule relating to conservation except after notice and hearing. The granting of such temporary injunctive relief against one who has been granted a permit to drill, without notice to the commission, would do by indirection the very thing which the statute condemns."

Equity application

There was still another development in Rule 37 law at Austin last week which transpired before the Railroad Commission with the application of Rowan and Nichols to the commission for "alternative relief" on act of a well drilled on a tenth of an acre offsetting their 25 acre William Todd "B" lease, Castleberry Survey. The alternatives were: (1) a permit to drill 20 more wells on the tract which already has five wells, giving them a density of one well to the acre, or (2) an adjustment of allowables between the five wells and the offsetting well on the tenth acre.

This application, in fact, asked for an application of the rules laid down by the Supreme Court in the famous case of Brown vs. Humble in which the court suggested that inequities be adjusted by adjusting the allowable rather than by drilling more wells. It is a suggestion which the Railroad Commission consistently rejected on its own initiative; now the commission has been asked in a formal motion to apply the rule.

Significance of the application lies wholly in that fact. It is to be presumed that a firm with as much experience in Railroad Commission matters as Rowan and Nichols would not have much hope of getting either of the suggested alternatives from the commission; therefore, the logical presumption was that groundwork was being laid for a lawsuit to compel the commission to apply the suggestion of the Supreme Court.

The commission March 18 granted Rown and Nichols one well and denied all other requests. Meanwhile, a spokesman for the company asserted that the company absolutely did "mean business." Whether that intention will carry them to the courthouse remains to be seen.

Limitation statute

Because of the numerous lawsuits over land titles which fall in the wake of the discovery of oil, lawyers were highly interested in an opinion by the Supreme Court which gave a clarifying construction of the rule and adverse possession under the five-year statute of limitations.

The court ordered a new trial of the trespass to try title suit brought by the heirs of Margaret Simonds who had sought recovery of one-half interest in 110 acres out of the Pleasant McAnally Survey. Stanolind Oil & Gas Company held a lease under the adverse claimant.

On the question of the five-year statute court said:

"Notwithstanding that there was a jury issue as to actual possession of the 110-acre tract for the 5-year period, the Court of Civil Appeals held that actual construction of the (adjoining) 53-acre tract by McGeorge constructively extended to the 110-acre tract . . . that McGeorge acquired title under the 5-year statute of limitations to the interest of plaintiffs in error. The court applied the rule announced by Associate Justice Williams in Allen v. Bogges, that a grantee's actual possesion of one or two distinct but adjacent tracts conveyed by the same deed will constructively extend to the other tract unless such possession is to be limited by another rule to which we shall refer." The other rule is that of Turner v. Moore: "where a deed describes land part of which is owned by one person and the remainder by another and an actual entry is made under it upon land of one of the owners, the possession thus taken cannot be held to extend

by construction to the land of the other, though the deed embraces it." It is the rule of Turner v. Moore that is appropriate in the instant case, for the land that McGeorge actually possessed was the 53-acre tract which the plaintiffs never owned or claimed.

"Whenever the actual possession of the invader ceased the constructive possession of the true owner became again effective. Adverse possession will not ripen into title unless the possession is continuous throughout the period of prescription. The five-year statute includes three requisites for the giving of notice to the land owner: the adverse possession, the payment of taxes, and the recorded deed, and the three must concur and must continue through the five-year period."

Delinquent gasoline tax suit appealed

A case which may be of importance to every refinery in Texas before it terminates was filed in the Supreme Court last week in the State's application for a writ of error in the case styled "State of Texas v. B. J. Wynne," appealed from the Court of Civil Appeals at Fort Worth.

The case was an attempt by the State to collect delinquent gasoline taxes from the insolvent Star Refining and Producing Company of Van Zandt County. The State's claim was based upon that fact of the gasoline tax law which gives the State a prior lien upon properties and equipment for the gasoline taxes. The lower court held that the State's lien was not a prior lien, but was inferior to the liens of private holders of chattel mortgages and deeds of trust and to the lien of the Federal Government for taxes. The Civil Appeals Court went even further and asserted the invalidity of that action of the law attempting to establish the State's lien.

It was the Civil Appeals Court's ruling which distributed State tax powers. If their right to a prior lien is taken away from them, their only recourse in defunct gasoline tax collection cases will be the bond which is required of gasoline manufacturers. This bond, while large, is adequate to cover taxes for only a very few days of operation by a normal small plant.

If the Supreme Court should uphold the Civil Appeals Court, some officials have suggested the only alternative is to increase the amount of bond required of the gasoline makers—a bond which already is a burden for the operator whose solvency is not open to question.

Investigate Michigan gas reserve situation in court

A one-man grand jury began taking testimony at Flint, Michigan, last week to determine why natural gas has not been made available to that city. The investigation, when completed, may reveal whether the state has enough natural gas to supply her needs, said Genesee County Prosecutor Joseph R. Joseph. The question has been a highly debatable one in the state for months —with independent producers maintaining there is an adequate reserve to supply additional Michigan communities now using manufactured gas, and utility company engineers contending reserves are insufficient to make changing over from manufactured to natural gas economically feasible.

"State officials will be among the first witnesses called," Joseph said. "We intend to hear Paul H. Todd, chairman of the Michigan Public Utilities Commission; C. A. Winder, the commission's chief engineer; R. D. Smith, state geologist, and possibly experts from the University of Michigan. After state witnesses have put in their testimony, we will call engineers and other representatives of independent gas producers.

"When these two groups have testified, we will get the picture as presented by representatives of Consumers Power Company. We will deal with that company because it furnishes Flint both gas and electricity. Its gas franchise has expired and its electric franchise will expire this year. The reason we are calling state officials and independent gas producers first is that we want to get all the information we can before we talk to the company. We will assemble all charges and claims and then ask Consumers to answer them.

"I intend to determine whether it is possible to bring natural gas to Flint. If I find it has been possible to give Flint natural gas and that somebody has been blocking it, I will try to prove conspiracy against the persons responsible. I am not jumping into this matter cold. I have held preliminary conferences with several state and utility officials. I wanted to know whether there was enough evidence to warrant a grand jury investigation. I found enough material to prompt me to ask Circuit Judge Paul V. Gadola to order a one-man grand jury investigation and he complied."

Dan E. Karn, vice president and general manager of the Consumers company, said his company will be glad to supply any information asked by the grand jury. "The company's position is well known," he said. "We are eager to serve Flint and other communities with Michigan natural gas whenever adequate reserves are proven. Our estimates do not indicate that such reserves are available yet, and our estimates correspond closely with those of the United States Bureau of Mines and other disinterested authorities."

Oil at the Capitols

Chairman of Pennsylvania investigating committee charges public is being gypped by industry, after gasoline prices remain steady despite crude slash

PENNSYLVANIA'S oil industry investigation commission, created by the 1937 legislature to probe into all branches of the petroleum industry to ascertain whether it should be regulated as a public utility but inactive for the past month because of a taxpayer's suit challenging its constitutionality, charged last week that savings made possible by a 30 percent reduction in crude oil prices have not been passed on to the state's motoring public.

In a formal statement issued by Judge Ralph H. Smith, chairman, the commission said:

"The attention of the oil industry investigation commission has been called to the 17 cents per barrel reduction in the price of Pennsylvania crude petroleum, the fourth reduction within 12 months. While the price of crude has gone down 29.8 percent in a year, there has been no change in the price of lubricating oils or gasoline nor the other major products used by the consuming public. None of the saving in the price of crude has been passed on to the man who drives in the gas station to get gas for a day's work or a trip with his family. Somewhere along the line all this difference is being absorbed as profit by those, who having control, fix the price of crude. Every man who drives an automobile has a vital interest in that situation.

"The 18,000 producers in Pennsylvania have a much more serious interest than even the average motorist. Their livelihood is at stake, their homes may be sacrificed, their businesses may be lost. A great pioneer Pennsylvania industry may be forever destroyed by the ruthless manipulation of prices if the reports reaching the oil commission are even approximately accurate.

"The commission, organized and existent pursuant to an act of the last legislature, set out to find these facts, to follow the trail wherever it would lead, to determine why there should be a cut of 84 cents per barrel in the price of crude within 12 months. In Venango County alone, with an estimated production of 2500 barrels per day, this amounts to $2100 daily loss, or more than $63,000 per month, taken out of the pockets of the citizens of that one county.

"The present activities of the oil industry investigation commission have been at least temporarily stopped by the action of a taxpayer who asked the Dauphin County Court to issue an injunction. The commission stands ready, willing and able to serve the people of the oil producing counties of Pennsylvania in their effort to get the facts and to suggest the necessary remedies that will reestablish their business on a sound basis. At the present time, we are helpless to inquire into the facts by reason of technical objections to the exercise of the commission's authority. If the commission is not permitted to pursue its investigation to an end, the people of Pennsylvania may never get the truth."

Allowable Picture

April allowables to be considered by important states soon . . . Meetings continue to be held in California in an effort to reduce production.

SEVERAL very important proration meetings are scheduled for early dates. The first and foremost one is that of Texas on March 19, when its crude oil allowable for April will be up for discussion. The Kansas Corporation Commission will hold a hearing at Wichita on March 24 at which time evidence will be received preparatory to fixing the April crude oil allowance for the state. A hearing to determine Oklahoma's April crude oil allowable will come before the State Corporation Commission at Oklahoma City on March 31.

California still trying to lower production

Natural decline of many wells in the Wilmington-Long Beach oil field is expected to lessen the danger of over production, together with strenuous efforts on the part of the Central Committee of California Oil Producers to reduce the output.

The production situation for this important Los Angeles Basin field declined something like 30,000 barrels during the past few days, and approximately 56,000 barrels daily during the past 10 days. Frequent meetings are being held by proration officials to encourage operators to adhere to the suggested quotas and remarkable progress along this line has been reported.

There is a strong possibility that two or more fields in the state will be under a 10-day production holiday schedule. Lakeview operators, Kern County, tried this method out a year ago and succeeded in getting their production down. This is expected to be tried again, with a chance that other San Joaquin Valley and Basin fields will follow suit. Apparently, the central committee has the situation well in hand due to the cooperation of many producers.

Proposal for California proration law held up

A week ago, a movement started by A. C. Mattei, official of Honolulu Oil Consolidated, to introduce a bill to the California legislature, that would place the petroleum industry under state regulation, was cooling. The movement was started too late by its sponsors. Not enough time was given to preparing the industry for such a bill, and according to recent reports, little, if any effort will be expended to push it through at present. Nevertheless, it is believed that another attempt will be made before the next session of the legislature, to get action on it by the industry.

Highlights of the bill provide for active regulation of the industry by three salaried commissioners appointed by the governor and subject to recall by the industry. But the fact that there is no record in the state of a successful recall movement, aided in defeating the measure when it came up for vote a week ago.

A vote of confidence in the present voluntary oil curtailment program was accorded the Central Committee of California Oil Producers a day or two after the mass meeting. More than 20 prominent independent operators agreed to observe the current program.

Michigan gas rules under advisement

The Michigan Public Utilities Commission, conducting a hearing last week on proposed changes in rules governing natural gas, took under advisement a proposal that a committee of 19 to represent all interests affected be appointed to help draft new rules for production, transmission and distribution. The committee, suggested Howell M. Grant, of Mt. Pleasant, counsel for independent producers, would represent the commission, the state conservation department, the public, landowners, producers, transmission companies, distributors, the attorney general and the state fire marshal.

C. A. Winder, commission chief engineer, presented a preliminary draft of new regulations at the beginning of the hearing March 14, from which the committee would work. The commission would pass on all rules which were drafted by the special committee to obtain a set of new regulations to replace those which have been without major changes since 1934. More than 100 attended the hearing. Gas wells that would be affected number more than 400.

Proposed changes advanced by Winder would provide for the guarantee of equal consideration for small and large producers in the purchase of natural gas by large utility distributing firms. Another would provide for adequate fire fighting equipment in each field.

Labor Situation

Contradictory testimony in Humble case . . . Oil work contracts cancelled in Mexico . . . Workers of Pure Oil ask union charter from State of Texas.

THE spotlight in the oil industry's labor situation during the past week was focused on Humble Oil & Refining Company's labor case at Baytown, Texas. No particular headway has been made during the numerous hearings as statements from witnesses for the company and the union were in many cases contradictory. At Austin, Texas, a group of Pure Oil Company's refinery workers approached the Secretary of State last week to force his issuance of a charter for their local union. The Mexican labor situation looked somewhat brighter, as foreign oil companies hoped the dispute would be settled at an early date.

Humble dispute

Denials that the Humble Oil & Refining Company encouraged an anti-C.I.O. petition or a "company union" in violation of the Wagner labor act formed the burden of testimony by a score of witnesses in the latest hearing at Baytown, Texas, before J. C. Batton, trial examiner of the National Labor Relations Board. One after another, statements of the previous week's board witnesses, charging Humble supervisors and foremen with efforts to coerce or interfere with refinery employes in union activities, were contradicted. Several supervisors and foremen made the statements that they were instructed not to take an active interest in or against the employes' federation, now the collecting bargaining power which the union in its charges seeks to break up.

In a previous hearing, W. A. Combs, attorney for Baytown Oil Workers Union, suggested a dissolution of one of three charges against the company. The charge involved the company's dismissal of a certain employe. Immediately after trial examiner Batton had granted the motion to dissolve this particular case, Hines Baker of the legal staff of the company moved for dismissal of the remaining charges. However, a decision on this motion was reserved by the examiner.

As a whole, efforts to prove illegal company interference with union organization affairs among the nearly 4000 refinery employes of the company have made little headway during the numerous hearings.

Pure workers want charter

Labor troubles of the larger companies reached Austin last week as a group identified as Pure Oil Company refinery workers sought to mandamus the secretary of State to compel his issuance of a charter for their local

[*Continued on page 56*]

Geologists Meeting

Proration praised as having advanced producing methods and enlarged reserves, but criticized as causing excessive drilling, freezing of capital

By GRADY TRIPLETT, Staff Writer

TWO conflicting estimates of the value of proration in the oil industry were offered the American Association of Petroleum Geologists in the opening session of its twenty-third annual meeting in New Orleans, March 16, 17 and 18.

Colonel E. O. Thompson, member of the Texas Railroad Commission and chairman of the Interstate Oil Compact Commission, gave proration credit for the rapid advance of science as a guide to oil production as well as an assistance in enlarging the oil reserves of the nation.

J. E. Pogue, Chase National Bank, New York, charged proration with being responsible for excessive drilling, which results in the freezing of capital.

F. H. Lahee, Sun Oil Company, Dallas, in a review of wildcat drilling in 1937 pointed out that a saving in drilling costs could have been effected by drilling smaller holes in determining the extent of structures.

Reserves Increase

Thompson said that estimates of petroleum reserves have been increased by 2,800,000,000 barrels in estimates of the American Petroleum Institute and that improved methods of recovery were largely responsible for this. Proration came into this increase by its part in encouraging the adoption of scientific methods of production.

To show the effect of excessive drilling due in part to proration, Pogue projected the effect on flowing wells in Texas through 1942. This showed flowing wells in Texas, East Texas excepted, to have had average daily output of 51.3 barrels in 1936, 52.1 barrels daily in 1937, which indicated daily output of 40.4 barrels in 1938, 36.6 barrels daily for 1939, 33.2 barrels in 1940, 32.7 barrels in 1941 and 31.8 barrels in 1942. His article appears in full in this issue.

The annual meeting was opened with an address of welcome by Commissioner Jesse Cave, who represented Governor Richard W. Leche. R. D. Reed, Los Angeles, past president of the association, gave the response. R. A. Steinmayer, Tulane University and general convention chairman, presided at the opening session. H. B. Fuqua, association president, gave his annual address, after which the program went into the technical sessions.

Technical papers came into the program Wednesday morning and continued through Friday.

In "Economic Aspects of Drilling," Joseph E. Pogue, New York, analyzed normal incentives of drilling by correlating well completions with the price of crude oil. The recent abnormal rise in drilling was attributed to new economic factors, chief of which is proration. On this basis Pogue set up a basis of well output for Texas, exclusive of the East Texas field, in which he predicted that daily production per flowing well in the state will be 40.4 barrels in 1938; 36.6 barrels in 1939; 33.2 barrels in 1940; 32.7 barrels in 1941 and 31.8 barrels in 1942.

N. H. Darton, United States Geological Survey, retired, discussed "Tectonics of the Southwest," in which he gave the reason for the absence of later Mississippian beds over part of the area as "a long period of emergence of large irregular areas, although possibly in some places sediments were laid down and removed by erosion in the time prior to the long period Pennsylvanian and Permian deposition."

The theory of ownership prevailing in each state in regard to oil in place was presented by George A. Wilson, college of law, Tulane University, New Orleans.

The main geologic factors which produce oil reservoirs were discussed by F. B. Plummer, University of Texas, Austin. He gave an evaluation of the physical and chemical factors which influence and bring about the migration of oil and gas into the reservoir and determine the rate of yield of oil wells.

Predict More Fields

As an indication of oil reserves not yet discovered, Alexander Deussen, Houston, offered a comparison between Harris County, Texas, and the remainder of the Texas-Louisiana Gulf Coast. His conclusion was that development of the whole area in keeping with development of the one county would give the coastal plain another 351 oil fields, with ultimate output of 9,000,000,000 barrels.

Deussen spoke on discoveries in 1937 and projected the possibility of more fields and high yield from the Gulf Coast to show that the future promises to keep pace with the past by providing more oil than engineers have estimated in their studies. Harris County was taken as the unit for estimate since it has been minutely explored, while the remainder of the area awaits similar exploration and development.

The situation in North Louisiana and Arkansas was presented by H. K. Shearer, The Hunter Company, Shreveport, who indicated less drilling in North Louisiana and more drilling in Southern Arkansas for 1938 as compared with 1937. He emphasized the fact that of the 411 oil wells from 416 completions in North Louisiana last year, 91 were in the old Caddo District.

A reserve of 100,000,000 barrels was offered by Alfred H. Bell, Illinois Geological Survey, Urbana, as the result of completions in new areas in that state in 1937.

West Texas Geological Society is seeking to have the mid-year meeting held in El Paso.

Southern Arkansas

Recent deep drilling in Southern Arkansas and accurate well logs were stressed by Warren B. Weeks, Phillips Petroleum Company, El Dorado, Arkansas, as the basis for determining that the area has 4000 feet of sediments below the Travis Peak (Trinity), thought to be Mesozoic in age. He pointed out that 1800 feet of Eocene series lies unconformably on the Gulf series, that the underlying Comanche series includes the Fredericksburg, Paluxy, Glen Rose and Travis Peak, which have total thickness of 4600 feet in the southwest corner of the state and is absent 85 miles northeast due to pre-Gulf truncation. Also truncated at this time were the underlying 2250 feet of Cotton Valley formation, the 240 feet of Buckner red beds, 870 feet of Smackover limestone and 1800 feet of the Eagle Mills red shale and salt formation.

The paper by Lloyd W Stephenson and John W. Reeside, Jr., "A Comparison of the Upper Cretaceous Deposits of the Gulf Region and the Western Interior Region," brought out that: "the gross sequence of Upper Cretaceous deposits in East Central Texas is like that of the Great Plains but the sequence in the eastern Gulf region has no close counterpart in the interior and that in the Rocky Mountains has none in the Gulf region."

A resume of Cretaceous fields in Louisiana was made up of papers presented by title only by C. C. Clark, Union Producing Company, Shreveport; A. F. Crider, Shreveport; R. T. Hazzard and E. F. Warren, Gulf Oil Corporation, Shreveport; E. B. Hutson, Standard Oil Company of Louisiana, Shreveport; H. R. Kamb and S. A. Packard, Arkansas Fuel Oil Company, Shreveport; and G. D. Thomas, Shell Petroleum Corporation, Shreveport.

Reasons for removal of certain limestone and marl beds, outcropping in Wayne County, Mississippi, as well as underlying sands and clays from the Vicksburg group and reclassifying them as the Limestone Creek group were outlined by B. W. Blanpied and Roy T. Hazzard, Gulf Oil Corporation, whose paper was titled, "Stratigraphic Relations of the Limestone Creek Group."

Urban B. Hughes, Laurel Oil & Gas Company, Laurel, Mississippi showed why the Bucatunna formation has been assigned to the lower part of the Limestone Creek group.

Chalmer J. Roy, Louisiana State University, Baton Rouge, gave results of recent studies of the Citronelle formation in which he pointed out, "recent studies have shown these clays are faulted and overlain unconform-

ably by the sands of the so-called citronelle formation."

Only brief presentation was made of the extensive paper by L. W. Stephenson and W. H. Monroe, United States Geological Survey, Washington on "Stratigraphy of the Upper Cretaceous Series in Mississippi and Alabama."

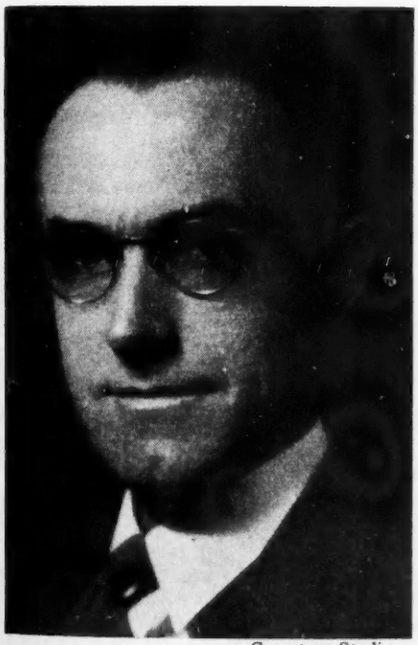
From a revision of the stratigraphy of the Coastal plain of Georgia, C. Wythe Cooke, Washington, and Arthur C. Munyan, Atlanta, the conclusion was made that the major structural features of the area are a broad shallow basin centering off the southern part of the coast and a flattening of the strata (probably without reversal of dip) in the western part of the state.

Fifteen zones from Miocene age to Wilcox were considered by Donald W. Gravell and Marcus A. Hanna, Gulf Oil Corporation, Houston, who offered one strike cross section and two dip cross sections in presenting, "Tertiary Zones of Correlation through Mississippi, Alabama and Florida."

Results of studies of heaving sale in thousands of wells in the Texas Coastal Plain were combined in the paper by J. M .Frost, III, University of Texas, Austin. The conclusions drawn were that heaving shale occurs in trends or belts, the trends are based on five formations, the trends parallel the present shore line of the Gulf of Mexico, the surface trends are nearly all of the same width, up dip trends can be drawn but down dip trends

[*Continued on page 65*]

DANALD C. BARTON



—Greystone Studio

J. P. D. HULL

NEW OFFICERS OF A. A. P. G.

DONALD C. BARTON, head of the geological research department of Humble Oil & Refining Company, Houston, and one of the pioneers of the application of geophysics to petroleum exploration in the United States, last week was elected president of the American Association of Petroleum Geologists. Harold W. Hoots, geologist of Union Oil Company of California who served as president of the Pacific Coast division of the association in 1935, was elected vice president. Ira H. Cram, Pure Oil Company, Tulsa, was reelected secretary-treasurer. Another reelection was that of W. A. Ver Wiebe as editor of the Bulletin of the association, while J. P. D. Hull, business manager of the association since 1926, was reappointed.

Barton succeeds H. B. Fuqua, chief geologist of the Fort Worth division of Gulf Oil Corporation. In the early days of geophysics on the Gulf Coast, Barton was in charge of torsion balance and magnetometer work for Geophysical Research Corporation.

Prior to entering consulting work the geologist's new president was chief geologist of the southern division of Amerada Petroleum Corporation, and when that division was converted over to Rycade Oil Corporation he, became chief geologist of the latter. On January 15, 1934, Barton concluded seven years of private consulting work to become consulting research geologist for Humble Oil & Refining Company.

Vice President Hoots succeeds Clarence L. Moody, chief geologist of the Shreveport, Louisiana, division of the Ohio Oil Company. Prior to going with Union Oil Company, Hoots was connected with the United States Geological Survey, his work taking him to Oklahoma and Arkansas in 1921, to West Texas in 1922, Wyoming the following year, then California and Washington, D. C. He became a member of Union Oil Company's staff in 1928.

Hull, the reappointed business manager of the A.A.P.G. since permanent headquarters of the association were established in Tulsa in 1926, came to the organization from Louisiana Oil Refining Corporation, for which he was chief geologist at Shreveport. Born at Highland, New York, August 10, 1889, Hull received his education in that state, eventually graduating from Hamilton College in Clinton in 1913. Four years later he took a masters degree at Johns Hopkins at Baltimore.

In the meantime Hull had already started geological work, joining the New York Geological Survey upon graduating from Clinton. In 1915 he joined the Maryland Geological Survey as field assistant and in 1917, the Georgia Geological Survey, staying with the latter three years and then going with Louisiana Oil Refining Corporation.

HAROLD W. HOOTS

—Blank & Stoller

IRA H. CRAM

Geophysics Meeting

Progress of search for oil structures traced by E. E. Rosaire from early methods to adoption of soil-gas analysis and other new scientific ways.

PROGRESS of the search for oil from methods of determining presence of structure to those by which actual existence of oil were brought before the Society of Exploration Geophysicists January 15 and 16 by E. E. Rosaire of Houston, whose subject was "Shallow Stratigraphic Variations Over Gulf Coast Structures."

He dealt with the adoption of soil-gas analysis, a comparatively new scientific method in the search for oil. He traced the history of geology, then geophysics, with refraction shooting, reflection shooting and finally "Eltran," a contraction of the words electrical transient, in which the changes in transmitting an electrical impulse through the ground between electrodes are recorded and then translated into a representation of the underground landscape.

These he designated as the most recent methods of searching for structure. Then he called attention to what the drillers long ago designated "dome digging," a condition found uniformly over oil deposits wherein appreciable hardening of the beds are certain depths was accepted as favorable evidence of oil at a lower depth. The explanation of this condition is the assumption that even in arching at deep levels, the overlying beds have a tendency to thicken and to mineralize, with the result that at a point near the surface beds were harder and called for "dome digging."

From this came the more recent method of testing soil near the surface to determine its gas analysis. If the arches at great depths caused a hardening higher up, the result of both structure formation and presence of minerals, the next question concerned the escape of lighter hydrocarbons

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NEW GEOPHYSICISTS OFFICERS

FABIAN M. KANNENSTINE of the Kannenstine Laboratories, Houston, last week in New Orleans was elected president of the Society of Exploration Geophysicists at its annual convention. Kannenstine, who occupied the post of vice president of the society in 1937, was succeeded in the latter position by W. T. Born of Geophysical Research Corporation, Tulsa. H. B. Peacock, Geophysical Research, Incorporated, Houston, was elected secretary-treasurer, succeeding Miss M. E. Stiles of Independent Exploration Company, Houston. M. M. Slotnick, Humble Oil & Refining Company, Houston, was reelected editor of the Journal of the society.

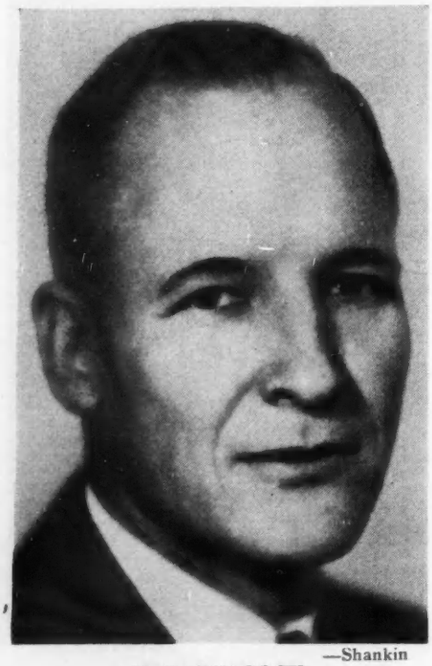
Kannenstine, who succeeded John Clarence Karcher, president of Geophysical Service, Incorporated, Dallas, as president of the society, is a native of Missouri, born in St. Louis on September 16, 1891. He took a B.S. degree from Washington University, St. Louis, in 1913 and a Ph.D. from University of Chicago in 1922. In 1913 and 1914 he was an electrical engineer with General Electric Company and in 1914 to 1916 an instructor in public schools. From 1916 through part of 1925 he was back at the University of Chicago, serving as assistant professor of physics and research instructor. In 1925 he became director of the research laboratory of Geophysical Research, Incorporated, Bloomfield, New Jersey, eventually becoming vice president in charge of research for Rosaire and Kannenstine in Houston in 1932. In 1935 the geophysicists made him editor of their journal.

Peacock, the new secretary-treasurer, is vice president of Geophysical Service, Incorporated, in charge of the Houston office. Born in Keosauqua, Iowa, in 1894, he took an A.B. from University of Iowa in 1921, following it with a masters degree in physics in 1922 and a Ph.D. in 1925 from the same school.

The first year out of school was spent as an instructor of physics in the University of Arizona, which Peacock left in 1926 to go with Geophysical Research, Incorporated, in Houston.

Slotnick, the reelected editor of the journal of the Society of Exploration geophysicists, holds two degrees in mathematics from Harvard: M.A. in 1925 and Ph.D. in 1926. He held teaching fellowships in that university in 1922-25 and was a National Research Fellow in Princeton in 1928-29. Slotnick held a Harvard Research Fellowship at Hamburg University in Germany and taught math at Grinnell College two years. He is now supervisor of the interpretation group of Humble's geophysical department.

FABIAN M. KANNENSTINE



—Shankin

H. B. PEACOCK

M. M. SLOTNICK

Oil Demand Further Reflects Slump

Less favorable trends of consumption lately show need for strict control of crude oil production and refinery operations in next several months.

By L. J. LOGAN
Associate Editor

ALTHOUGH the petroleum industry so far has rowed creditably against the ebbing business tide, matching less favorable trends of oil consumption with stricter control of supply, it cannot yet afford to rest on its oars.

For the general business situation has continued unsettled, and the recent trends of oil consumption have reflected further the influence of the general business decline.

Further Caution Needed

To remain in a safe position, the industry must continue to compensate for shrinking or lagging oil consumption by exercising strict control over crude production and refinery operations.

Only through extraordinary efforts in curtailing crude oil production have stable markets been preserved in recent months, and only through similar special efforts can continued market stability be assured for the next several months, in view of the continuing general business uncertainty. The need for exceptionally strict production allowables continues urgent, and should be recognized by the state conservation officials and the oil producers when proration programs are adopted for April and the ensuing several months.

It should be generally recognized, moreover, that the current satisfactory situation prevails largely through benefit of the strict crude control and that the situation might have been considerably better if similar restraint had been applied to refinery operations. Actually, far too much gasoline and fuel oil have been made, and surpluses of those products have burdened the markets and weakened prices. In the coming months, therefore, it will be doubly important to hold refinery output down to economic levels, as determined by the trends of consumption.

The need for moderation in forthcoming months in both crude production and refinery activity is emphasized by analyzing the developments of the past few months, when favorable and unfavorable results have directly followed success or failure in making oil supply conform with oil demand.

As a whole, the industry has suffered much less than numerous other industries from the business decline; and earnings have remained relatively good for most companies, although they have fallen below the levels of early 1937. Making this general satisfactory record possible has been the circumstance that markets and prices have held comparatively stable, through benefit of fairly close balancing of supply with demand as well as through the well-sustained demand.

The producing division of the industry has continued to fare particularly well, however, in consequence of the maintenance of crude oil prices generally at unchanged levels. And significantly, it has been in the producing division that the best regulation of supply has been accomplished.

The refining and marketing divisions, in contrast, have had less satisfactory results, as prices of gasoline have declined materially, from refinery to service station, since last fall. It has been in the refining division, similarly, that the least success has been achieved in balancing supply with demand, as evidenced by the present surplus stocks of gasoline and fuel oil.

January Demand Disappointing

New evidence of the need for strict regulation of wells and refineries has been furnished through the latest monthly report on petroleum by the Bureau of Mines, covering January. For that report showed that actual demand for petroleum in January fell short of conservative expectations, failing to fulfill the estimates of the Bureau of Mines.

The bureau had forecast that total demand for domestic crude in January would be 6.2 percent larger than in that month last year. But in the recent report it was shown that total demand for United States petroleum in January, 1938, actually was 6/10 of 1 percent smaller than in January, 1937.

Exports of crude oil in January, 1938, were 64.7 percent larger than in that month last year, and exports of refined products were 7/10 of 1 percent larger. But total domestic demand was 3.3 percent lower.

As in the case of the total demand for petroleum, the demand for gasoline in January was disappointing. The Bureau of Mines had estimated that United States gasoline consumption in January, 1938, would be 8.3 percent larger than in January, 1937, but actually, it proved only 4.4 percent larger.

More Recent Estimates

The disappointing demand in January has particularly unfavorable implications in the light of the Bureau of Mines forecasts for later months. For the bureau estimated for February and March somewhat smaller year-to-year increases in demand than it had estimated for January. And if January's actual experience is repeated, February and March demand will be practically down to or below the comparable levels of 1937. The Bureau of Mines in its March forecast, for instance, estimated that total demand for domestic crude would be 5.4 percent larger this year than

last year; and that total gasoline demand would be up 3 percent, with domestic requirements ¼ of 1 percent higher and exports 48.3 percent larger.

Demand Less Brisk

In addition to showing that demand had failed to meet expectations, the January report of the Bureau of Mines also gave evidence of further slowing down of oil consumption. For in various important instances, demand was less favorable in a January, 1938-January, 1937, comparison than it had been a month before in a December-to-December comparison.

Thus the total demand for United States petroleum in January, 1938, was 6/10 of 1 percent smaller than in January, 1937; whereas that in December had been 2.5 percent larger than one year previously.

Exports of crude oil were 64.7 percent larger in Juanary, 1938, than in January, 1937, whereas they had shown but a 50.5 percent gain in December. But exports of refined products in January were up only 7/10 of 1 percent over a year before, while they had been 8.1 percent larger in December.

As in the case of total petroleum demand, the domestic requirements did not hold up as well in January as in December. The total domestic demand for petroleum products in January, 1938, was 3.3 percent smaller than in January, 1937, whereas December requirements had been 4/10 of 1 percent larger than one year previously.

Refined Products

The domestic demand for gasoline in January, 1938, was 4.4 percent larger than in January, 1937. While this gain was below the expectations of the Bureau of Mines, it contrasted favorably with results in the previous month, when domestic gasoline demand was 3/10 of 1 percent smaller than one year previously.

Kerosene consumption in the United States has continued to slow down. In January, 1938, it was only 1.2 percent larger than in January, 1937; whereas December requirements had been 4.4 percent above one year before.

Fuel oil demand was particularly disappointing in the opening month of this year, falling materially under that of the initial month last year. This development was in marked contrast with trends in late 1937, when fuel oil demand was running materially higher than one year previously.

Further Flattening Indicated

The results in January, 1938, represented, in general, some further contraction in demand, which already had been under way for several months. While the demand was less favorable in January than in December, it already had leveled off considerably in December. Thus for December as well as January, oil demand showed smaller gains over one year previously than the improvement for all of 1937 over all of 1936, as indicated in the accompanying table.

Oil Demand Continues to Reflect Business Decline

This table shows supply and demand of all oils, and is based on latest Bureau of Mines monthly report on petroleum.

(Thousands of Barrels of 42 Gallons)

ITEM	YEARLY COMPARISON			DECEMBER COMPARISON			JANUARY COMPARISON		
	1936	1937	Change of 1937 from 1936 (Percent)	December, 1936	December, 1937	Change of Dec. 1937 from Dec. 1936 (Percent)	January, 1937	January, 1938	Change of Jan. 1938 from Jan. 1937 (Percent)
New Supply:									
Domestic production:									
Crude petroleum	1,099,687	1,277,653	+16.2	97,723	106,579	+ 9.1	98,567	106,007	+ 7.5
Daily average	3,005	3,500	+16.5	3,152	3,438	+ 9.1	3,180	3,420	+ 7.5
Natural gasoline	42,770	48,550	+13.5	4,019	4,305	+ 7.1	3,732	4,336	+ 16.2
Benzol	2,502	2,786	+11.3	247	151	—38.9	247	147	— 40.5
Total production	1,144,959	1,328,989	+16.5	101,989	111,035	+ 8.9	102,546	110,490	+ 7.7
Daily average	3,128	3,641	+16.5	3,290	3,582	+ 8.9	3,308	3,564	+ 7.7
Imports:									
Crude petroleum:									
Receipts in bond	2,528	1,912	—24.4	266	138	—48.1	.....	109	.....
Receipts for domestic use	29,799	25,572	—14.2	2,348	2,254	— 4.0	1,129	1,986	+ 75.9
Refined products:									
Receipts in bond	18,639	22,352	+19.9	1,397	1,709	+22.4	1,180	1,644	+ 39.3
Receipts for domestic use	6,138	7,316	+19.2	921	506	—45.1	679	478	— 29.6
Total new supply, all oils	1,202,063	1,386,141	+15.3	106,921	115,642	+ 8.2	105,534	114,707	+ 8.7
Daily average	3,284	3,798	+15.6	3,449	3,730	+ 8.1	3,404	3,700	+ 8.7
Increase in stocks, all oils	22,685	45,340	+99.9	3,663	2,319	—36.7	1,485	11,293	+702.9
Demand:									
Total demand	1,224,748	1,340,801	+ 9.5	110,584	113,323	+ 2.5	104,049	103,414	— 0.6
Daily average	3,346	3,673	+ 9.5	3,567	3,656	+ 2.5	3,356	3,336	— 0.6
Exports:									
Crude petroleum	50,313	67,686	+34.5	3,666	5,516	+50.5	3,596	5,953	+ 64.7
Refined products	81,681	105,127	+28.7	6,506	7,033	+ 8.1	7,935	7,988	+ 0.7
Domestic demand:									
Motor fuel	481,606	518,760	+ 7.7	39,590	39,457	— 0.3	33,696	35,176	+ 4.4
Kerosene	51,428	54,951	+ 6.8	6,148	6,420	+ 4.4	5,297	5,360	+ 1.2
Gas, oil and distillate fuels	102,757	117,377	+14.2	14,251	15,828	+11.1	14,856	12,642	— 14.9
Residual fuel oils	307,884	324,437	+ 5.4	28,255	27,636	— 2.2	28,119	25,144	— 10.6
Lubricants	22,323	23,374	4.7	1,821	1,489	—18.2	1,683	1,471	— 12.6
Wax	1,077	1,044	— 3.1	102	77	—24.5	104	115	+ 10.6
Coke	6,266	5,765	— 8.9	555	506	— 8.3	520	535	+ 2.9
Asphalt	20,595	22,936	+11.4	1,079	816	—24.4	894	1,077	+ 20.5
Road Oil	7,279	8,008	+10.2	193	162	—16.1	219	151	— 31.1
Still gas	57,046	61,296	+ 7.4	4,784	4,872	+ 1.8	4,519	4,937	+ 9.2
Miscellaneous	2,099	2,249	+ 7.1	165	158	— 4.3	157	137	— 12.7
Losses	32,394	27,791	—14.2	3,469	3,353	— 3.3	2,454	2,728	+ 11.2
Total domestic demand	1,092,754	1,167,988	+ 6.9	100,412	100,774	+ 0.4	92,518	89,473	— 3.3
Daily average	2,986	3,200	+ 7.2	3,239	3,251	+ 0.4	2,984	2,886	— 3.4
Stocks:									
Crude petroleum	288,579	306,084	+ 6.1	288,579	306,084	+ 6.1	286,759	306,689	+ 6.9
Natural gasoline	4,055	4,758	+17.3	4,055	4,758	+17.3	4,032	4,951	+ 22.8
Refined products	226,595	253,144	+12.0	226,595	253,144	+12.0	229,340	263,639	+ 14.9
Total, all oils	519,229	563,986	+ 9.0	519,229	563,986	+ 9.0	520,131	575,279	+ 10.6
Days' supply	155	154	+ 5.5	146	154	+ 5.5	155	172	+ 10.9

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METHODS FOR THE

Removal of Hydrogen Sulfide from Natural Gas

IN STATE OF TEXAS

By A. M. CROWELL
Chief Conservation Agent, Arkansas Board of Conservation,
Formerly Natural Gas Engineer, Railroad Commission of Texas
and
SOL SMITH
Chemical Engineer, Railroad Commission of Texas

AT present, Texas has 387 gas reservoirs containing 2949 gas wells which produce 2,032,754,000 cubic feet of gas per day.[1] Of this total 1,335,387,000 cubic feet (65.69 percent) is sweet gas, while the remaining 697,367,000 cubic feet (34.31 percent) is classified as sour. The disposition of this natural gas is as follows:

27.80 percent to pipe lines for fuel and light purposes
4.49 percent to lease operation and drilling
66.12 percent to gasoline plants for resale
1.59 percent to repressure.

Producers have long realized the necessity for economical and efficient means of purification of sour natural gas, not only in transmission lines but also in natural gasoline plants.

This sour gas contains varying amounts of sulfur, present in the form of hydrogen sulfide, mercaptans, or both. The areas in Texas containing excessive quantities of sour gas are the Western and Panhandle sections of the state. The great portion of work of purification has been carried out in West Texas due to the high hydrogen sulfide content of the gas as shown in Table 1.[2] The Panhandle, however, has a much lower concentration of hydrogen sulfide and produces large volumes of sweet gas, and for this reason has not taken any definite strides to treat these acid gases which comprise 44.7 percent of the daily withdrawals in this field.

TABLE 1
SOUR GAS PRODUCING AREAS OF TEXAS

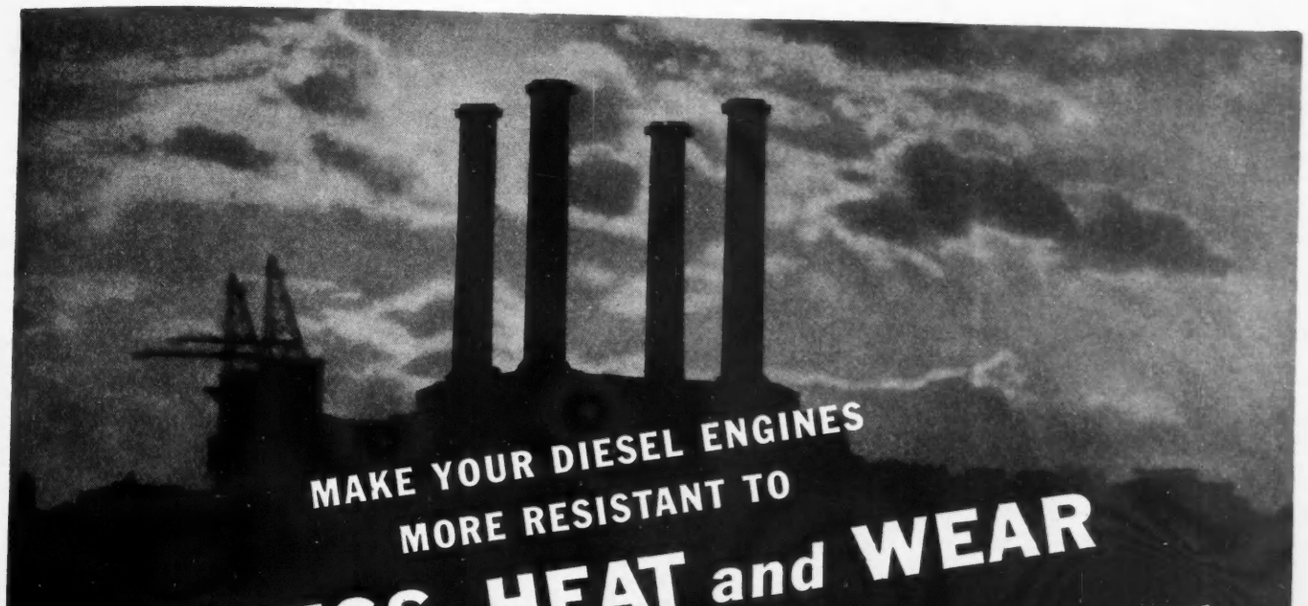
SOURCE OF GAS	Gains per 100 Cu. Ft.	Percent By Volume
Crand-Upton County	5,080—7,610	8.0—12.0
Big Lake Field	5,150—6,670	8.1—10.5
McCamey Field	3,180—	5 —
Panhandle Field	127— 950	.2— 1.5

IN The OIL WEEKLY of February 14, 1938, was published a paper entitled "The Method for Differentiating Between Sweet and Sour Natural Gas," by the authors of the accompanying paper. Since that time, there have been so many inquiries as to the method employed in extraction of hydrogen sulfide from natural gas that an investigation was made, and as a result this article has been prepared.

In selecting a method for purification of natural gas, several factors must be considered and studied carefully. A few of these necessary points are:

1. Volume of gas to be treated per day
2. Hydrogen sulfide content of the gas and also other impurities, such as mercaptans, carbon dioxide, and free oxygen
3. Pressure and temperature of the gas at the well
4. Degree of purification required
5 Location of plant or utility line.

With such information available, the most economical and efficient process may be planned and put into operation. A review of the literature shows a thorough investigation into this problem and the development of many valuable processes for natural gas purification. One of the earliest methods employed is known as the iron oxide process of "dry box purification."[3] The hydrogen sulfide is removed by passing the gas through a series of large flat boxes filled with hydrated iron oxide. The following



MAKE YOUR DIESEL ENGINES MORE RESISTANT TO STRESS, HEAT and WEAR

PART	TYPE OF STEEL	COMPOSITION					TREATMENT	SERVICE REQUIREMENTS (★)
		C	Mn	Ni	Cr	Mo		
Connecting Rods, Piston Rods, Crossheads	SAE 2330	.30	.75	3.50		*	Quenched and Drawn	Strength with high degree of toughness and ductility.
Piston Pins, Crosshead Pins	SAE 3120	.20	.45	1.25	.60	.35	Case Hardened Quenched and Drawn	Wear resistant surface with strength in the core.
Frame Bolts, Tie Rods, Staybolts, Cylinder Head Studs, Connecting Rod Bolts, etc.	SAE 4340	.40	.65	1.75	.65		Quenched and Drawn	Strength with a high degree of toughness and ductility.
Crankshafts	SAE 2330	.30	.75	3.50			Quenched and Drawn	Strength, toughness, and good fatigue resistance.
Crankshaft Pinions	SAE 3130	.30	.75	1.25	.60	.20	Quenched and Drawn	Strength with a high degree of wear resistance.
Exhaust Valves, Seats	Ni-Cr-Mo	.40	.75	1.25	.60		Special Heat Treatment	Resistance to elevated temperatures and corrosion by exhaust gases.
Exhaust Valve Spindles	SAE 3250	.50	.45	1.75	1.10		Quenched and Drawn	Strength with a high degree of toughness and ductility.
Intake Valves	21—12			12.0	21.0		Quenched and Drawn	Moderate strength, resistance to wear and deformation.
Camshaft	SAE 2330	.30	.75	3.50			Case Hardened	Wear resistant surface with toughness in the core.
Camshaft Gears, Timing Gears, etc.	SAE 3140	.40	.75	1.25	.60		Quenched and Drawn	Strength with a high degree of wear resistance.
Cams, Cam Integral, Cam Roller	SAE 2315	.15	.45	3.50			Case Hardened	High degree of wear resistance with toughness and strength in the core.
Valve Rockers	SAE 3250	.50	.45	1.75	1.10		Quenched and Drawn	Strength with a high degree of toughness and ductility.
Push Rods	Ni Cr (Krupp)	.17 max		4.00	1.50		Quenched and Drawn	High compressive strength and toughness.
Fuel Oil Pump Plunger, Barrel, Valve Plunger, Valve Barrel	SAE 2330	.30	.75	3.50		.65	Quenched and Drawn	High degree of wear resistance with strength and toughness in the core.
Fuel Oil Pump Lever	SAE 4340	.40	.65	1.75	.65	.35	Quenched and Drawn	Wear resistant surface with strength and toughness in the core.
Fuel Oil Pump Camshaft	SAE 2345	.45	.75	3.50			Case Hardened	Wear resistant surface with toughness in the core.
	Ni Cr (Krupp)	.17 max		4.00	1.50		Case Hardened	
	SAE 3215	.15	.45	1.75	1.10		Case Hardened	
	SAE 2315	.15	.45	3.50				

★ The remarks under "Service Requirements" serve to give a rough indication of the reasons underlying the choice of these steels. Individual characteristics of engine design and factors concerned with the economics of fabrication also, play an important part in the selection of suitable materials.

ALLOY NICKEL STEELS

Consult this Guide to typical Nickel Alloy Steel Compositions

THE varying stresses occasioned in Diesel operation, from cold starting through to full speed, demand tough, strong, wear-resisting materials. Yet wide variations in size, function, stress and operating temperatures demand different characteristics for different parts. In a great many cases, protection against expense, and delays due to breakdowns is assured with the correct Nickel steel part. The chart herewith indicates some of the well-established applications for Nickel alloy steels, together with typical data on compositions and heat treatments. To best meet requirements of individual Diesel parts specify Nickel alloy steels.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL ST., NEW YORK, N. Y.

equations express the chemical reactions that take place during the purification:

$$Fe_2O_3.xH_2O + 3\,H_2S \rightarrow Fe_2S_3 + (x+3)\,H_2O$$

or

$$Fe_2O_3.xH_2O + 3\,H_2S \rightarrow 2\,FeS + S + (x+3)\,H_2O$$

These boxes are arranged in series so that the gas may pass through three or four in succession. The positions of the boxes are changed at least once a week, and the flow of gas through the beds reversed each day. However, the periods between reversal of flow depends upon local conditions at the plant. The iron oxide is revivified by means of a fan or blower.

A formula[3] for the iron oxide process has been set forth. This formula is based on the maximum amount of gas to be purified per hour and not upon the average daily volume processed. The formula is:

$$A = \frac{G \times S}{3000 \times (D + C)}$$

Where:

A = Cross-sectional area in sq. ft. of oxide bed through which gas passes.
G = Maximum amount of gas in cu. ft., corrected to 60° F., to be purified per hour.
S = Factor for grains of hydrogen sulfide per 100 cu. ft. of unpurified gas.
3000 = Assembling constant.
D = Total depth of bed in feet.
C = Factor, depending on number of boxes used.

Values for factors S and C are as follows:

Conc. of H_2S in gas grains/100 cu. ft.	Factor
1000 or more	720
900	700
800	675
700	640
600	600
500	560
400	525
300	500
200 or less	480

No. of boxes used	Factor
2 in series	4
3 in series	8
4 in series	10
2-2 box sets with single catch box	6

Through use of an experimental purifier, Allyne[4] discovered that his results fell closer to the calculations based on the following formula as found in an English article.[5]

$$R = \frac{4050\sqrt{S}}{F\,W}$$

Where:

R = Volume of oxide required per M. C. F. of gas per hour.
S = H_2S content, grains per 100 cu. ft.
F = Active iron content of oxide percent.
W = Bulk density of material lbs. per cu. ft.

This method has been used with rather good results, especially for small volumes of gas. However, the iron oxide process has been rapidly replaced by the "liquid purification" methods due to the following advantages.[3]

(1) Greatly reduced ground space required.

(2) Complete removal of hydrocyanic acid from the gas.

(3) No addition of oxygen, which promotes gum formation and corrosion.

(4) One-third of back pressure of dry boxes.

(5) Adopted to purification of high-pressure gas.

As early as 1920, the Seaboard Process of gas purification[6] was introduced. This was the first liquid purification process widely adopted and consists in scrubbing the gas with a solution of soda ash, $Na_2\,CO_3$. The hydrogen sulfide is absorbed by the dilute solution in the following manner:

$$Na_2CO_3 + H_2S \rightarrow NaHS + NaHCO_3$$

The products formed in the above reaction are sodium hydrosulfide and sodium bicarbonate. If the natural gas contains appreciable amounts of carbon dioxide, a second reaction takes place:

$$Na_2CO_3 + CO_2 + H_2O \rightarrow 2\,NaHCO_3$$

These chemical reactions are reversible and may be

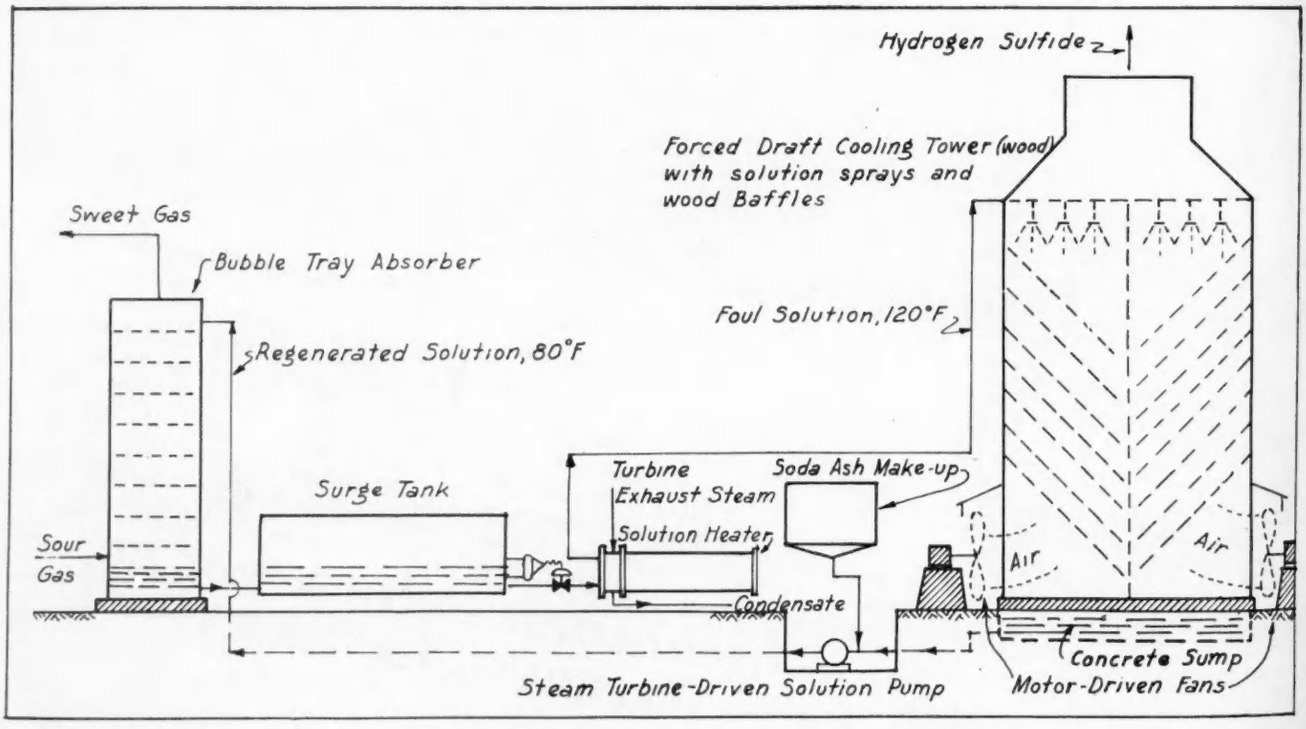
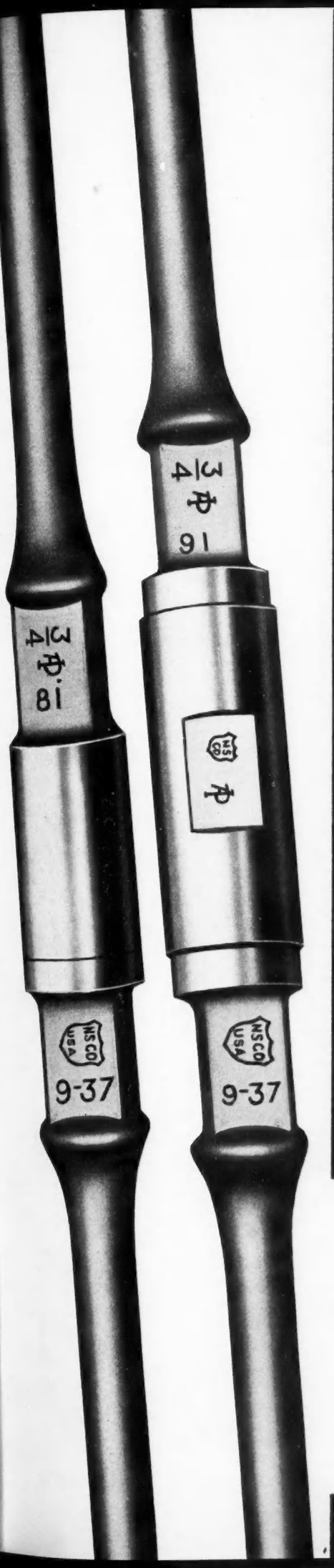


FIGURE 1
Removal with Soda Ash



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made to go from right to left, giving up the undesirable gases.

A flow diagram of the Seaboard Process, as installed in Phillips Petroleum Company's Crane Gasoline Plant, is shown in Figure 1. The sour gas enters the bottom of the absorber, and rises through a soda ash solution containing from 0.1 to 0.2 pounds of sodium carbonate per gallon of solution. The partially spent solution passes through a surge tank and then into a solution heater where the temperature is brought up to about 120° F. with indirect steam. From here the foul solution passes to the top of a wooden cooling tower. As the solution is sprayed downward, the hydrogen sulfide is expelled by motor-driven fans in the side of the tower. The regenerated solution collects at the bottom of the tower and is pumped back to the top of the absorber to be used again in the next stage of operation. Operating data on this plant are shown in Table 2.

Phillips Petroleum Company also operates a Seaboard Purification System at its Judkins Plant in Ector County. Operating data of this plant are given in Table 3.

El Paso Natural Gas Company uses the modified Seaboard method for treating its gas, due to the fact that appreciable amounts of carbon dioxide is present in the natural gas. This concern has found that the bicarbonate which is formed materially reduces the formation of sodium thiosulphate which is inactive in the absorption of hydrogen sulfide and which, without the carbon dioxide being present, forms rapidly and thus increases the use of soda ash, changing the cost of treating. The percentage of carbon dioxide contained in the natural gas will affect the consumption of soda ash.

The source of this gas is from the Jal Field in New Mexico and is brought into the purification system at 500 pounds line pressure. The operating data for this plant is shown in Table 4.

Schmidt[7] and Bacon give a very complete description of the method used by Lone Star Gas Company to remove hydrogen sulfide from its transmission lines. The conditions in this plant are unusual in that the gas to be scrubbed contains over 1 percent of oxygen and less than 2 grains of hydrogen sulfide per 100 cubic feet of natural gas. The company has developed a special scrubbing process for this gas, using iron-zinc catalyst in a soda ash solution. The hydrogen sulfide present in the gas is oxidized immediately after absorption. This plant has a capacity of approximately 15,000,000 cubic feet of gas per day, and has reduced the rate of corrosion of the pipe line considerably. Cost of operation is about one-fourth of a cent per thousand cubic feet of gas treated.

The Seaboard Process, however, has the disadvantage of discharging the hydrogen sulfide in the atmosphere, and in some localities this may be objectionable. This is overcome in some plants by burning the foul gas under boilers. Due to the dilution of the H_2S gas with a large volume of air during the regeneration of the soda ash solution, there can be no recovery of free sulfur.

Several sulfur recovery processes have been developed but have not come into general use for purification of natural gas. The three most important processes of this type are the Ferrox Process[8], the Nickel Process[9], and the Thylox Process[10]. The Two-Stage Thylox Process[10] is not suitable for purification of high pressure natural gas containing high concentrations of H_2S, but is well suited for lower values of H_2S where a complete removal is desired.

The next step made by the industry in natural gas purification was the introduction of the "hot actification" system. The two more important of this type of process which have come into commercial use in Texas are The Girbotol Process[11] and the Sodium Phenolate Process.

The operation of the Girbotol Process depends on the ability of aliphatic amines to absorb hydrogen sulfide and other acid gases. At higher temperatures, the affinity of the amines drop off with expulsion of the foul gases. The reversible reaction may be represented by the following equation:

$$2RNH_2 + H_2S \rightleftharpoons (RNH_3)_2 H_2S$$

TABLE 2

OPERATING DATA OF SEABOARD PROCESS

Phillips Petroleum Company's Crane Gasoline Plant

Volume of gas purified per day—M.C.F. Average	1,500
H_2S inlet, grains per 100 cu. ft.	6,000
H_2S outlet, grains per 100 cu. ft.	15
Purification efficiency, percent	99.8
Solution circulating rates, gallons per M.C.F.	300—700

TABLE 3

OPERATING DATA OF SEABOARD PROCESS

Phillips Petroleum Company's Judkins Plant

Capacity of system—M.C.F.	2,000
Volume of gas purified per day—M.C.F. average	300
H_2S inlet, grains per 100 cu. ft.	2,800
H_2S outlet, grains per 100 cu. ft.	15
Purification efficiency, percent	99.5

TABLE 4

OPERATING DATA OF SEABOARD PROCESS

El Paso Natural Gas Company

Volume of gas treated per day, M.C.F.	60,000
H_2S inlet, grains per 100 cu. ft.	300
H_2S outlet, grains per 100 cu. ft.	less than 1
Purification efficiency of H_2S, percent	99.7
Strength of Soda ash solution, degrees Be.	10
Circulation rate of solution, gallons per minute per million cu. ft.	.03

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Where: R represents the aliphatic organic residue.

The equipment used for this process is very similar to that of a gasoline absorption plant. The cycle for this purification system is shown in Figure 2. The lean solution enters near the top of the absorption tower and flows downward counter-currently to the rising sour gas. The purified gas, free of H_2S, is withdrawn from the top of the tower. The rich solution containing the acid gas is pumped through a heat exchanger and then flows into the upper section of the reactivator. This apparatus consists of a bubble plate tower in which the heated solution is stripped of its hydrogen sulfide. Low pressure steam is generated in the base of the reactivator or in a reboiler just outside the tower. The steam rises counter-currently to the solution and carries off the hydrogen sulfide at the top of the system. From the bottom of the reactivator, the regenerated solution is pumped through the heat exchanger and is then cooled before it is pumped to the top of the absorber, thus completing the cycle of operation. The hydrogen sulfide and steam leaving the top of the reactivator pass through the condenser where the steam is liquefied and returned to the top of the tower. The temperature of the absorber may be at any temperature up to 160° F. and at the pressure of the gas line. The reactivator operates at temperatures up to 250° F. and at a pressure from atmospheric to 15 pounds gauge.

Several amines have been used with great satisfaction, especially the ethanolamines. They do not have any action on steel, iron, cast iron, or nickel, but do react with copper, zinc, and aluminum. These amines are usually mixed with water in varying amounts to make up the strength solution desired.

Such a plant is in operation for Cabot Carbon Company at its Keystone Gasoline Plant near Kermit, Texas. The purified gas is used for camp fuel and to operate engines at the gasoline plant. The plant operates at a very high efficiency and is capable of handling a much greater volume than is processed at present. Monoethonolamine, $HOCH_2CH_2NH_2$, is used as the absorbent, and a few physical constants of this compound are here listed:

Molecular Weight	61.06
Nitrogen Content, percent	22.9
Boiling Point, °C.	172.2
Density, 20°/4°C.	1.071
Acid Gas Capacity in Solution, cu. ft./gal	4.0

The Girbotol Process has been used to purify natural gas for transmission lines with very good results. In one instance, a raw gas containing from 20 to 50 grains of hydrogen sulfide per 100 cubic feet is being treated by this process with a purification efficiency as high as 99.8 percent. At the same time, the dewpoint of the gas is lowered from an original dewpoint of 60° F. to approximately 0° F. The capacity of this plant is around 40,000,000 cubic feet per day. The above process is very desirable where ground temperatures are very low during the winter and hydrates are easily formed in the transmission lines.

One of the latest "hot actification" systems that has been put into commercial operation is the Sodium Phenolate Process. This process has been described in a complete manner by Powell.[12] The working principle is based on the ability of phenol to increase in acidity with temperature at a greater rate

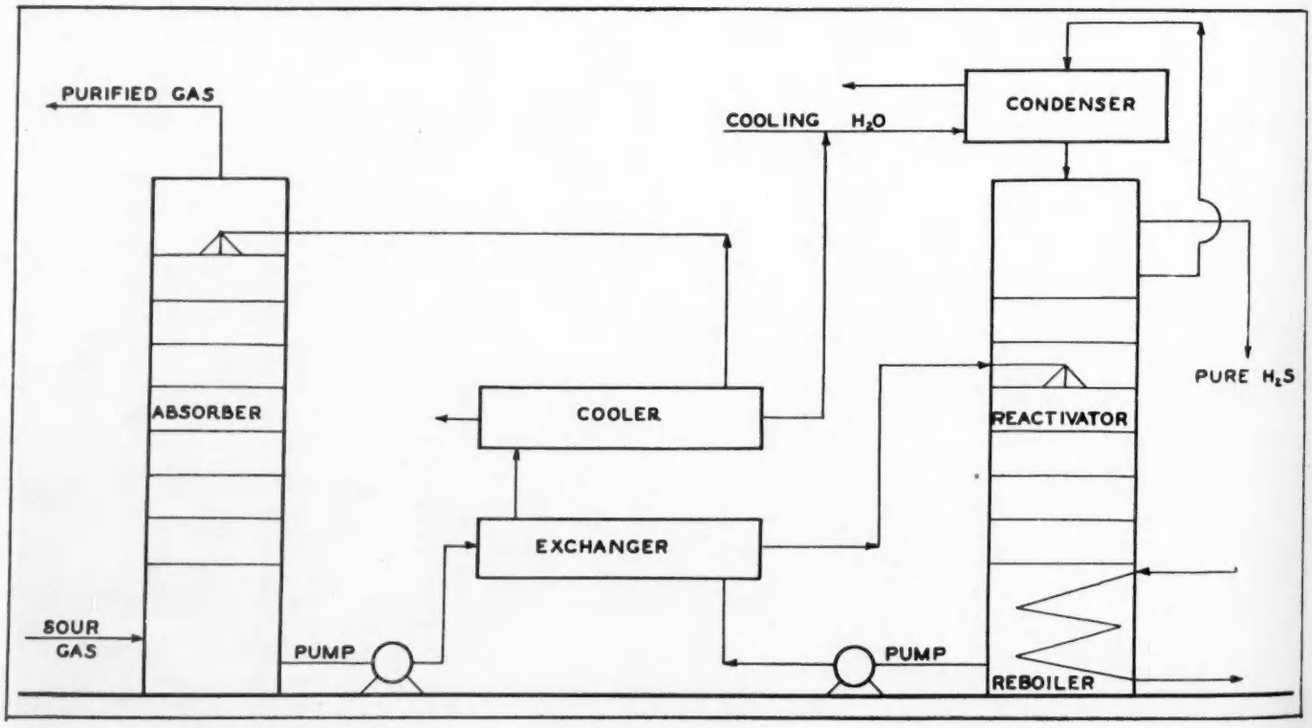
TABLE 5

OPERATING DATA OF GIRBOTOL PROCESS

Cabot Carbon Company Keystone Gasoline Plant
Winkler County, Texas

Volume of gas purified per day, M.C.F.	125
H_2S inlet, grains per 100 cu. ft.	200
H_2S outlet, grains per 100 cu. ft.	less than 2
Purification efficiency, percent	99
Strength Solution used, percent	20

FIGURE 2
Girbotol Purification Process



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than does hydrogen sulfide. The molecular heat of electrolytic dissociation for phenol is —6100 calories while for hydrogen sulfide this value is —6060 calories. Because of this fact it may be seen that phenol, at the high temperature of actification, will have the tendency to drive out the hydrogen sulfide gas. In the absorption stage, which is carried on at a much lower temperature, the above characteristics are reversed. This is shown by the following reversible reaction:

$$NaOC_6H_5 + H_2S \rightleftarrows NaHS + C_6H_5OH$$

A flow diagram of the Phenolate Process is shown in Figure 3. Sour gas is introduced at the bottom of the absorber and rises to the top as it passes from tray to tray. The phenolate solution flows into the absorber about one-third the distance from the top and passes down through the rising gas, absorbing the hydrogen sulfide. The foul solution, under the pressure of the gas, passes from the bottom of the absorber into a heat exchanger where the temperature of the solution is raised by the hot actified solution returning from the actifier. From the exchanger the solution rises to the top of the actifier to be stripped of its hydrogen sulfide. This is accomplished by means of a steam reboiler at the bottom of the actifier. The steam and phenol vapors rise through the trays of the tower, counter-currently to the down-flowing solution. This causes the hydrogen sulfide to come out of the solution and pass out of the system at the top of the actifier. From the bottom of the tower the hot actified solution passes through a circulating tank, is pumped through the heat exchanger, passes through a solution cooler where it is cooled to ordinary temperature, and is forced to the top of the absorber to be used again in the next cycle of operation. The purpose of the dephlegmator is to cool the rising vapors from the actifier and return the condensed water and phenol back into the system.

TABLE 6

OPERATING DATA FOR PHENOLATE PROCESS

Phillips Petroleum Company Goldsmith Plant

Capacity of plant, M.C.F.	10,000
Volume of gas purified per day, M.C.F.	500
H_2S inlet, grains per 100 cu. ft.	1,200
H_2S outlet, grains per 100 cu. ft	less than 15
Purification efficiency, percent	98.8
Strength of Caustic Solution degrees Baume	10—15
Amount Phenol used lbs./gallon of solution	.3
Solution circulating rates gal./M.C.F. of gas	5—15

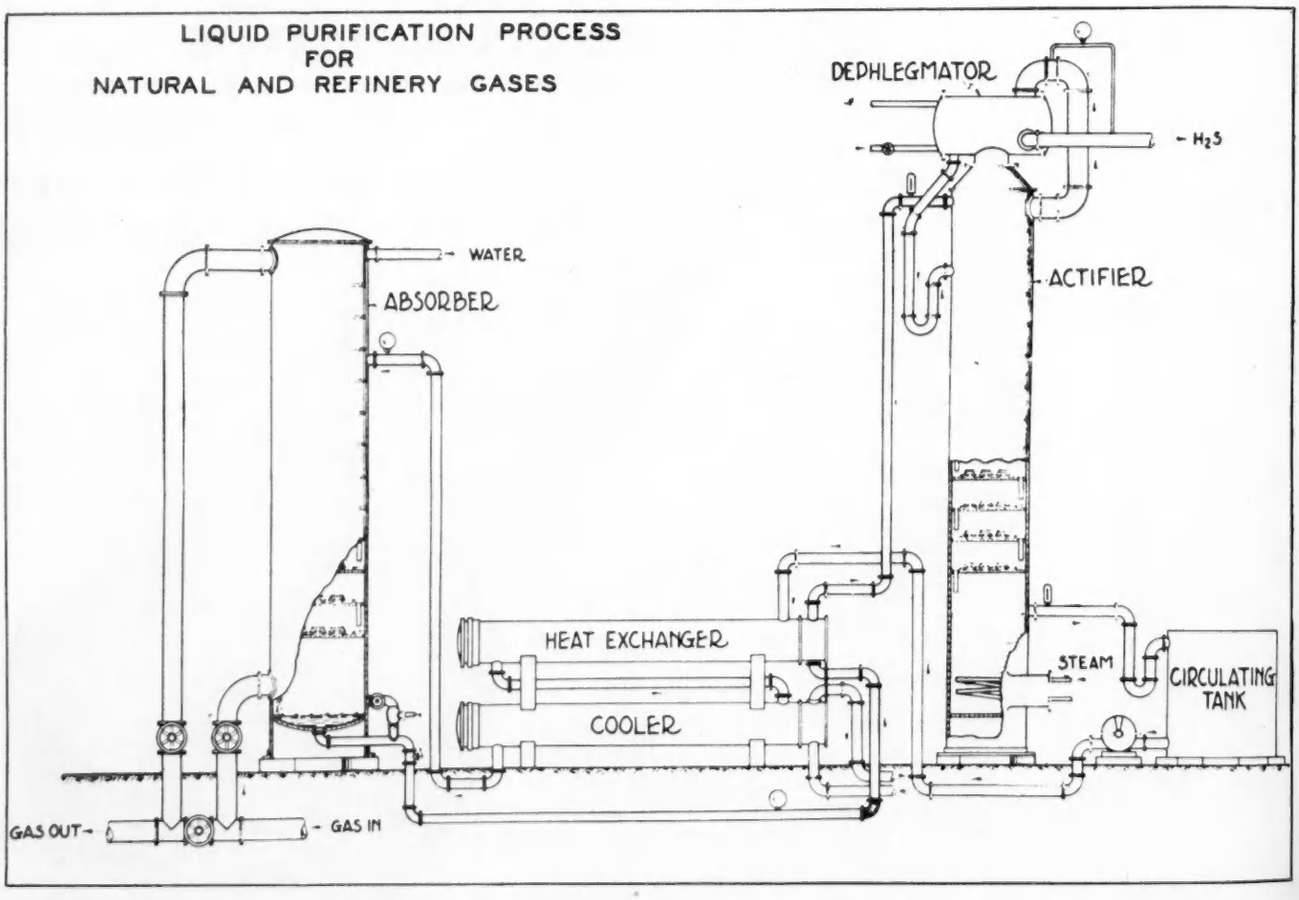
The Phillips Petroleum Company has such a system in operation at its Goldsmith Gasoline Plant. The sour gas is purified down to "clean" to Tutwiler test, and reports are that the plant is working at a very good efficiency. Table 6 gives the operating data on the above plant.

An estimated operation cost for the Phenolate Process[13] is presented in Table 7.

In Table 7 the biggest cost is steam. This item can be reduced considerably by regenerating the phenolate solution in a direct fired boiler or still. Since natural gas is so plentiful in Texas, the cost of actification can be greatly lowered. The cost of labor, power, and water will depend on local conditions and can be figured accordingly. Phenol sells for 7 cents

FIGURE 3

Sodium Phenolate—Hot Actification System



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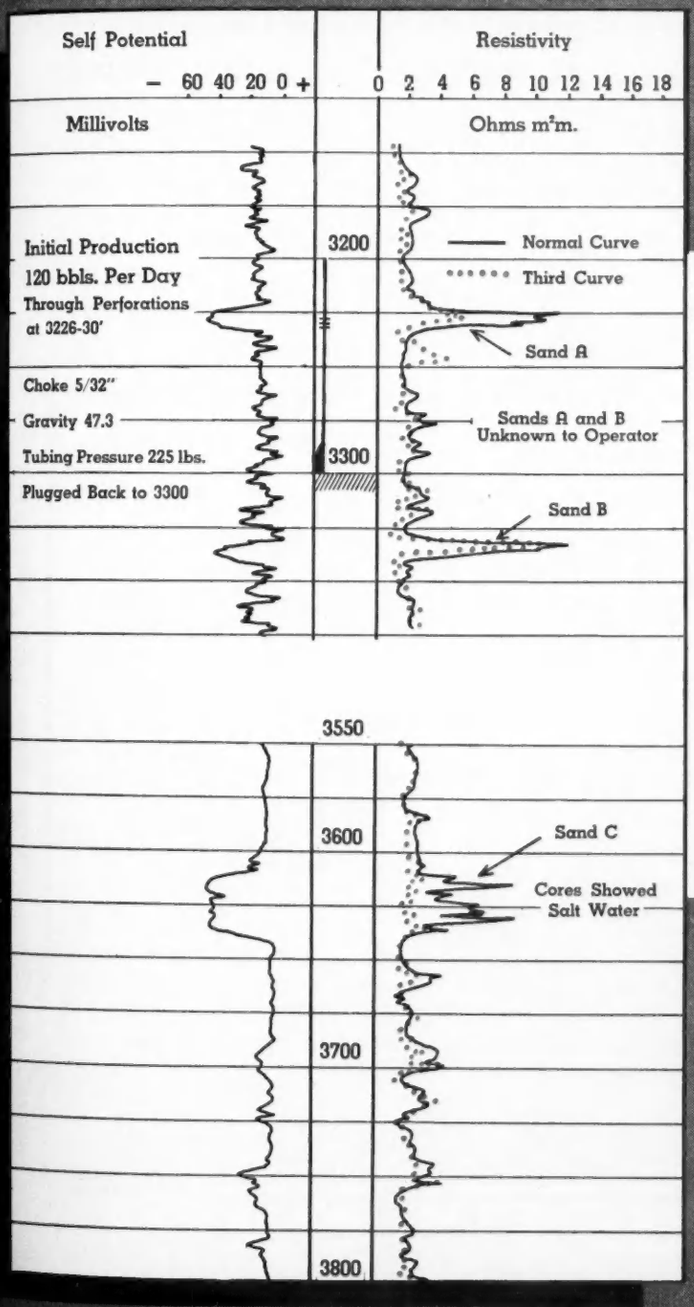

The Third Curve, or lateral investigation diagram, an exclusive Schlumberger development, improves the lateral investigation of the hole as illustrated by the accompanying diagram.

Resistivity Curve I, or normal curve, is indispensable for a correct delineation of the producing formation but has a depth of investigation of only three feet and is therefore affected by the sands contaminated by mud invasion.

Resistivity Curve II, or Third Curve, also has its limitations but is an indispensable complementary curve. It has a depth of investigation of over ten feet and **"looks behind the invaded part of the sands."** Accordingly, sands "A" and "B", which show resistivity on both the normal and the Third Curve, are oil or gas bearing sands. On the contrary, "C", which shows some resistivity on the normal curve, but none on the Third Curve, is therefore definitely a salt water sand.

This was what happened on the wildcat, R. Adams No. 1, drilled by Rowan and Hope. Cores were obtained in "C" and showed salt water, but no cores were available for "A" and "B". Nevertheless, on the strength of the Third Curve and Side Wall Samples, casing was set on "A" without further testing, resulting in a new oil well and a new field, the Alfred field.

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TABLE 7

ESTIMATED OPERATING COST PHENOLATE PROCESS

Labor: 2 man hours.
Steam: 3 to 5 lbs. per lb. of H_2S recovered.
Power: .01 Kw. hr. per lb. of H_2S.
Water: 30 gallons per lb. H_2S.
Phenol: .02 lb. per M.C.F. of actual gas (Under Absorber Conditions)
Caustic Soda: 1/7 lb. per lb. of phenol.
Maintenance: $5 per day for 10,000 M.C.F. Plant.

per pound while an average value for the caustic soda is 3 cents per pound.

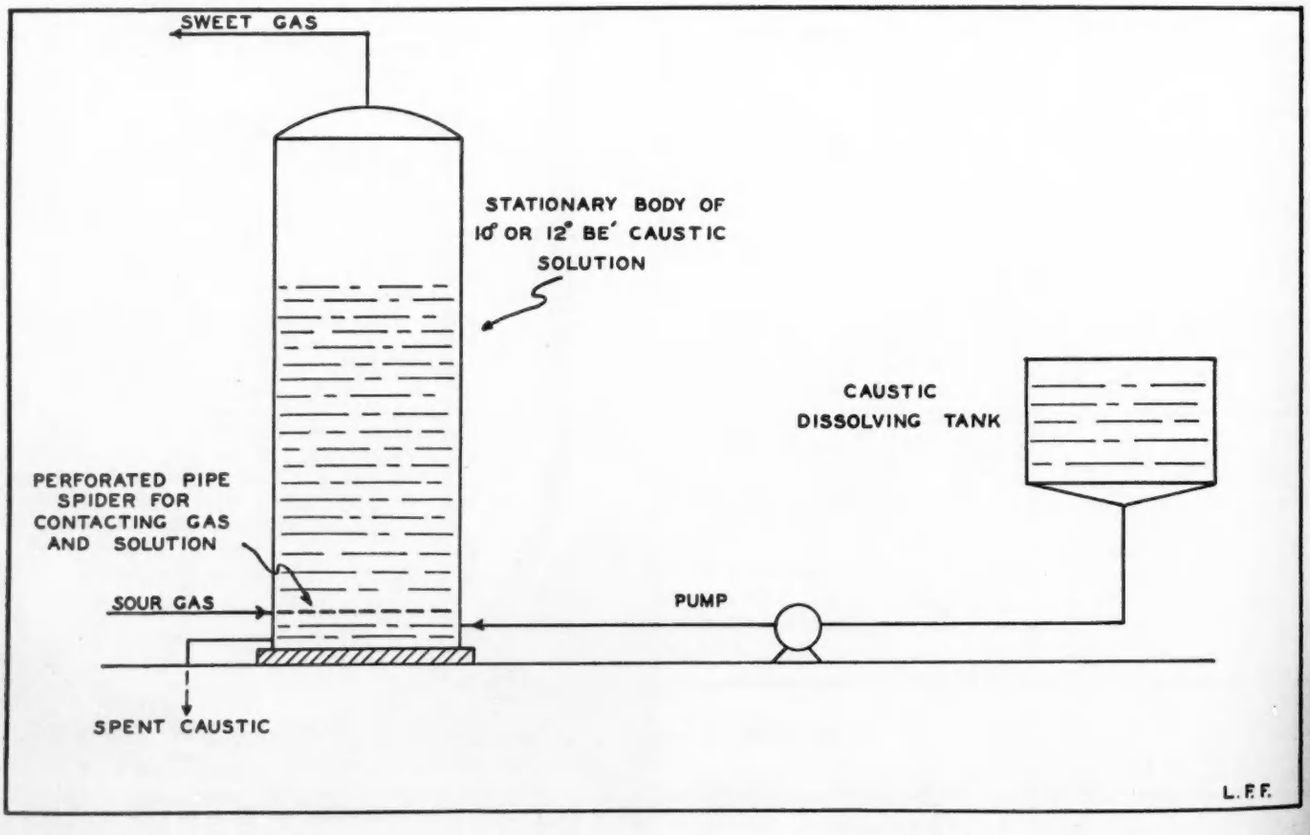
Table 7 can be applied to the Seaboard Process, as the operating costs are very similar. The Seaboard Process, however, has an added cost in pumping due to the larger volume of solution it employs.

One feature of the "hot actification" system that has not been mentioned is the fact that free sulfur and sulphuric acid can be made as by-products. This has been carried out with refinery still gases containing high concentration of H_2S, but very little had been done along this line in Texas, mainly because of the economics involved.

For economical purification of small volumes of natural gas, Phillips Petroleum Company has installed a system using a 10 to 12 degree Baume solution of caustic as the purifying agent. About 10 to 20 m.c.f. of gas is processed daily and the spent solution is discarded. The operation of this process is shown in Figure 4.

The removal of hydrogen sulfide from natural gas is just beginning to gain headway in the State of Texas. As can be seen from the text of this paper, rapid strides already have been made due to constant research over the past three years. It is evident that before any operator confronted with the problem of removing hydrogen sulfide from his gas could make any installation, it is absolutely necessary that he consider the practicability and economics of his own particular case. With a growing demand for a sweet natural gas in the Texas Panhandle, it is expected that much work shall be done there over the next few years.

FIGURE 4
Removal with Caustic



Acknowledgments

The authors wish to acknowledge indebtedness to G. W. McCullough, Phillips Petroleum Company, G. M. Carvlin of The Koppers Company for their valuable information, and to Dr. F. H. Dotterweich of Texas College of Arts and Industries for his aid in reviewing the literature, and to the various companies mentioned in this paper for their cooperation in furnishing plant data.

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Economic Aspects of Drilling

By JOSEPH E. POGUE*

THIS paper analyzes the normal incentives to drilling by correlating well completions in the United States with the price of crude oil, the Federal Reserve Board Index of Industrial Production, the production of crude petroleum, and crude oil discoveries. As a result of this multiple correlation, the recent abnormal rise in the drilling rate is emphasized and attributed to the entry of new factors largely related to the manner in which proration functions. A projection is then made of the drilling rate in the State of Texas to 1942 and the per-well allowable estimated both for East Texas and the rest of the state, segregated into flowing and pumping units. The estimated daily production per flowing well for Texas, exclusive of the East Texas field is estimated to be: 1936, 51.4; 1937, 52.1; 1938, 40.5; 1939, 36.2; 1940, 33.1; 1941, 32.7; and 1942, 31.8. Finally it is shown how wider well spacing and other measures for retarding the drilling impetus can not only correct this decline but even reverse the trend.

This paper was presented at the Annual Meeting of the American Association of Petroleum Geologists in New Orleans, March 16, 1938.

THE rate of oil-field drilling in the United States is one of the key factors in the equilibrium of the petroleum industry. Since the trough of the depression in 1931-1933, the number of well completions has increased at a geometric rate, attaining a level of 32,812 in 1937; and the drilling momentum has been such as not only to involve the employment of much unneeded capital in the production department but also to constitute a flaw in the functioning of proration and a risk to the stability of the business. It is the purpose of this paper to analyze the normal incentives to drilling and, by showing the recent departure of the drilling curve from its associated factors, to emphasize and measure the entry of unstabilizing influences; and, finally, to point the issue by projecting the probable course of the production-per-well in the State of Texas.

Part I—Correlation Analysis

It is obvious that the drilling rate is responsive to the price of crude oil, the volume of required production of this commodity, the level of general business, and the availability of newly discovered oil fields, as well as to other factors not so readily reducible to quantitative terms. The former group of statistical influences has been operative for a long period; but some of the non-statistical factors, such as those arising under the influence of proration, are relatively recent and are now operating to distort normal relationships and create strains in the industrial structure. The methods of correlation analysis, applied to the statistical factors, provide some measure of the importance and incidence of the non-statistical factors.

The data that have been subjected to correlation analysis are presented in Table 1, and the period selected is 1915-1937 inclusive. Each of these series with its respective trend is shown in graphic form in Figure 1. It will be observed at once that the trends of completions and price are downward, whereas the trends of the Federal Reserve Board Index of Industrial Production, crude oil production, and the two-year moving total of discoveries are upward. The equations of the respective trends are as follows:

Well completions	$X_1 =$	$-151.51\ X_5 + 24.895$
Price of crude oil	$X_2 =$	$-3.76\ X_5 + 181.61$
Federal Reserve Board Index of Ind. Prod.	$X_3 =$	$0.57\ X_5 + 84.52$
Crude oil production	$X_4 =$	$39.16\ X_5 + 253.30$
Two-year moving total of discoveries	$X_6 =$	$84.23\ X_5 + 1008$

Where X_1 = Well completions in the U. S.
X_2 = Weighted average price of crude oil at the well, in cents per barrel.
X_3 = Federal Reserve Board Index of Ind. Production, 1923-1925 = 100
X_4 = Production of crude oil, in millions of barrels.
X_5 = Years from 1914.
X_6 = Two-year moving total of discoveries, in millions of barrels.

The relationship between price and completions for the 23-year period under consideration may be shown by means of a scatter diagram (see Figure 2). The equation representing the relationship is:

$$X_1 = 80.39\ X_2 + 12{,}105$$

in which X_1 is the number of completions and X_2 the weighted average price of crude oil at the well expressed in cents per barrel. The coefficient of correlation is $+0.76$, representing about a 58 percent degree of conformance, and the average deviation, or error, is ± 3020 wells. Inspection of Figure 2 reveals that the widest deviation from the average relationship is recorded for the year 1937. The chart and equation indicate that price has a smaller effect upon the drilling rate than might be expected from the logic involved. Variations of 10 cents a barrel from current prices indicate an effect upon the drilling rate of only about 800 wells per annum. If the two series are recomputed in terms of deviations from their respective trends and these deviations correlated, the coefficient of correlation is raised to 0.985.

A similar range of computations

*Vice President, The Chase National Bank of the City of New York.

The writer is indebted to Messrs. Norman D. Fitz Gerald and Basil B. Zavoico, Department of Petroleum Economics, The Chase National Bank, for assistance in the preparation of Parts I and II, respectively, of this paper.

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was made, in turn, for the relationships between completions and the Federal Reserve Board Index of Industrial Production, the domestic production of crude petroleum, and a two-year moving total of oil discoveries — the three remaining series shown in Figure 1. The results of all the separate correlations may be summarized as follows:

Series	Coefficient of correlation of raw data	Coefficient of correlation based upon deviations from trend
Completions vs. Price	+0.76	+0.985
Completions vs. FRB Index of Ind. Prod.	+0.56	+0.982
Completions vs. Production	—0.02	+0.951
Completions vs. Discoveries	+0.83	+0.852
Completions vs. Four Series Combined	.....	+0.993

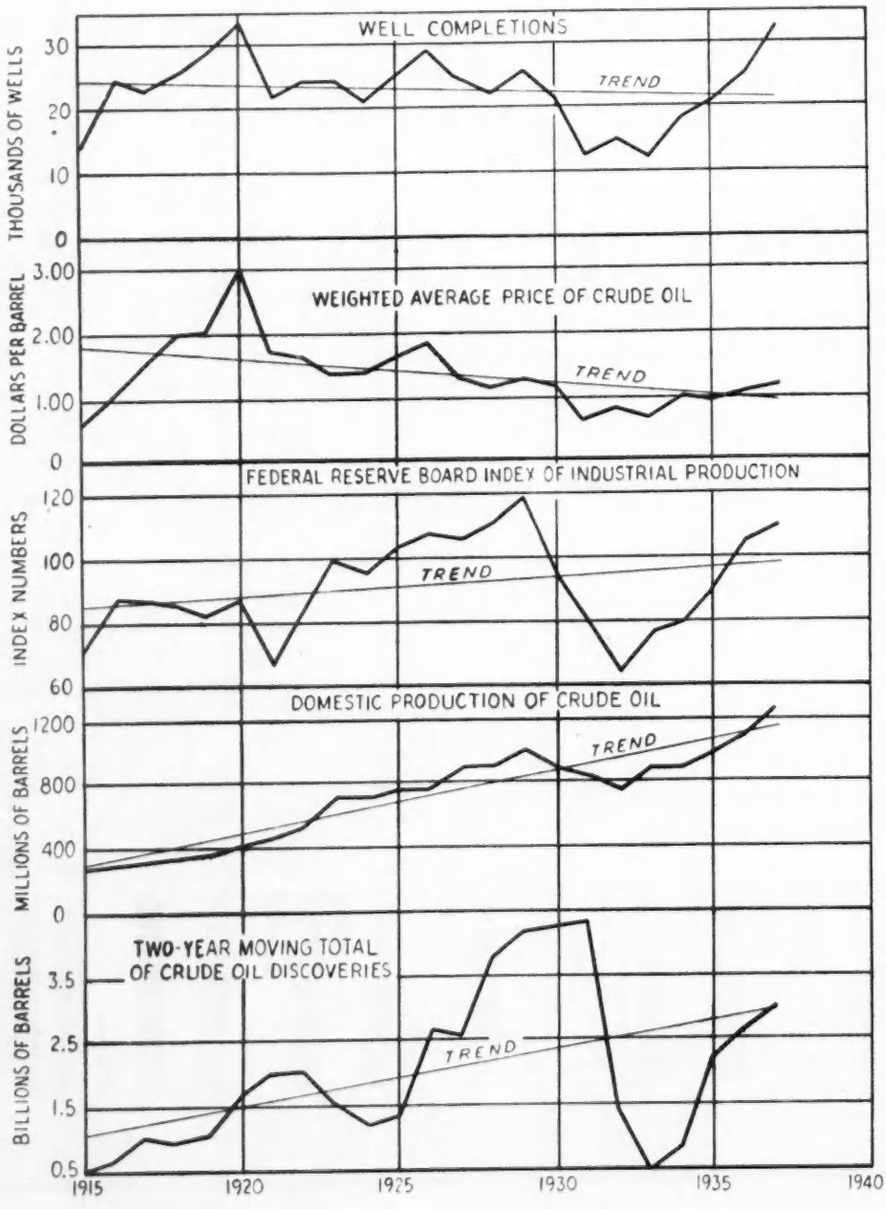
By relating the four series simultaneously to completions, a high degree of conformance is obtained, the coefficient of correlation based upon deviations from trend becoming +0.993. The result of this multiple correlation is shown in Figure 3, in which the heavy line is the actual number of wells completed each year and the dashed line represents the theoretical number that would have been completed if the factors considered represented the entire range of influences and the relationship were perfect. The equation representing the commensurability of the two curves is as follows:

$$X_1 = 70.61\ X_2 + 160.43\ X_3 - 2.84\ X_4 + 155.62\ X_5 - 0.44\ X_6 - 134$$

Where X_1 = Estimate of well completions.
X_2 = Weighted average price of crude oil at the well, in cents per barrel.
X_3 = Federal Reserve Board Index of Industrial Production.
X_4 = Production of crude oil; in millions of barrels.
X_5 = Years from 1914.
X_6 = Two-year moving total of discoveries, in millions of barrels.

FIGURE 1

Number of well completions in the United States by years, 1915-1937, together with four associated statistical series.



The average difference between the two curves is 1754 completions, but it will be observed at once that the maximum deviation is for the year 1937 and that the rise in the completions since 1933 is very much more rapid than the curve of associated factors. In short, the relationship of the two curves during the past four years clearly indicates the operation of influences absent in the earlier period; or, in other words, the drilling rate has come under the stimulus of causes extraneous to price, business conditions, production, and discoveries available for drilling. This circumstance is well-known in informed quarters, but the incidence of the development is perhaps not fully appreciated. Among the residual influences affecting the drilling rate are the bunching of lease expirations, a low interest rate, inflation fears, and the uneconomic stimulus of the proration mechanism itself, particularly those phases of its administration that create a motive for drilling wells in excess of those required for effective withdrawal of quotas.

During the four years since 1933, the cumulative increase in the number of completions has been 20,500, whereas the cumulative increase in the indicated number that would have been called for under the formula was 7678—a difference of 12,822 completions. The number of "unnecessary" wells drilled in the course of the past four years must, accordingly, lie within this spread.

On the basis of an unchanged crude oil price, a business index of 90, a crude oil production of 1260 million barrels, and a continuation of the past two-year rate of crude oil discoveries, the formula indicates a reduction of 3004, or about 9 percent, in the number of 1938 completions as compared with 1937. If, however, as seems likely, there is some retardation in the influence of the non-statistical factors, the indicated reduction would

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be augmented, suggesting 28,000 to 29,000 completions for 1938.

Part II
Projection of Per-Well Allowable

The drilling of wells in excess of equilibrium requirements[1] creates a cumulative pressure manifesting itself, under proration, in the form of a declining per-well allowable. As is well-known, this pressure finds its most acute reflection in Texas, because of the large ratio of reserves to normal markets, the methods of administering proration, and other factors characteristic of oil conditions in that state. In order, however, to get at an adequate measure of this factor, it is necessary to project the data after deducting from the totals the East Texas situation (which is a unit within itself) and the number and output of pumping wells in the rest of the state. In this way a measure of the pumping wells in Texas, exclusive of the East Texas field, is arrived at. In order to make the computations, it is necessary to assume a specific production rate for the state of Texas. This assumption in terms of the state's 1937 production taken at 100 is as follows: 1938 = 100; 1939 = 105; 1940 = 110; 1941 = 115; and 1942 = 120. The wells are divided into pumping wells and flowing wells for 1936 and 1937, the data being taken from compilations based upon the records of the Texas Railroad Commission. These two categories of wells, for the East Texas field and for all of Texas excluding East Texas, are then projected for five years into the future on the basis of assumed drilling rates and calculated transfers from year to year of a share of the flowing wells into pumpers. The pumping wells are then assigned a horizontally extended unit production, and the remaining production after division by the estimated number of flowing wells yields the estimated daily allowable per flowing well. While it cannot be expected that this projection can be precise, the results are nevertheless believed to have validity within practical limits and therefore to be serviceable as a measure of the problem. The data employed are presented in Tables 2 and 3 and plotted in Figures 4 and 5.

The East Texas field is of interest in this bearing because of

[1] See J. E. Pogue, An Equilibrium Theory of Proration, Amer. Inst. Min. & Met. Eng., Annual Meeting, Feb., 1938, for explanation of the equilibrium concept.

TABLE 1

Well completions in the United States together with four related statistical series, by years, 1915-1937

Year	Well Completions* (Number)	Weighted Average Price of Crude Oil at the Well* ($ per Bbl.)	Federal Reserve Board Index of Ind. Prod.† 1923-25=100	Production of Crude Oil* (Million Barrels)	Two-Year Moving Total of Crude Oil Discovered‡ (Million Barrels)
1915....	14,157	0.64	73§	281	530
1916....	24,619	1.10	87§	301	650
1917....	23,407	1.56	87§	335	1,070
1918....	25,687	1.98	86§	356	910
1919....	29,173	2.01	83	378	1,050
1920....	33,911	3.07	87	443	1,630
1921....	21,937	1.73	67	472	2,010
1922....	24,689	1.61	85	558	2,040
1923....	24,438	1.34	101	732	1,510
1924....	21,888	1.43	95	714	1,230
1925....	25,623	1.68	104	764	1,390
1926....	29,319	1.88	108	771	2,670
1927....	24,143	1.30	106	901	2,540
1928....	22,331	1.17	111	902	3,800
1929....	26,356	1.27	119	1,007	4,210
1930....	21,240	1.19	96	898	4,310
1931....	12,432	0.65	81	851	4,400
1932....	15,021	0.87	64	785	1,440
1933....	12,312	0.67	76	906	500
1934....	18,197	1.00	79	908	870
1935....	21,420	0.96	90	997	2,240
1936....	25,166	1.09	105	1,098	2,710
1937....	32,812	1.19§	110	1,276	3,030

* U. S. Bureau of Mines.
† Survey of Current Business.
‡ 1915-1934 taken from chart published in American Petroleum Industry, 1935, p. 38. 1935-1937 from Oil and Gas Journal, Jan. 27, 1938, pp. 39, 50, 51.
§ Estimated.

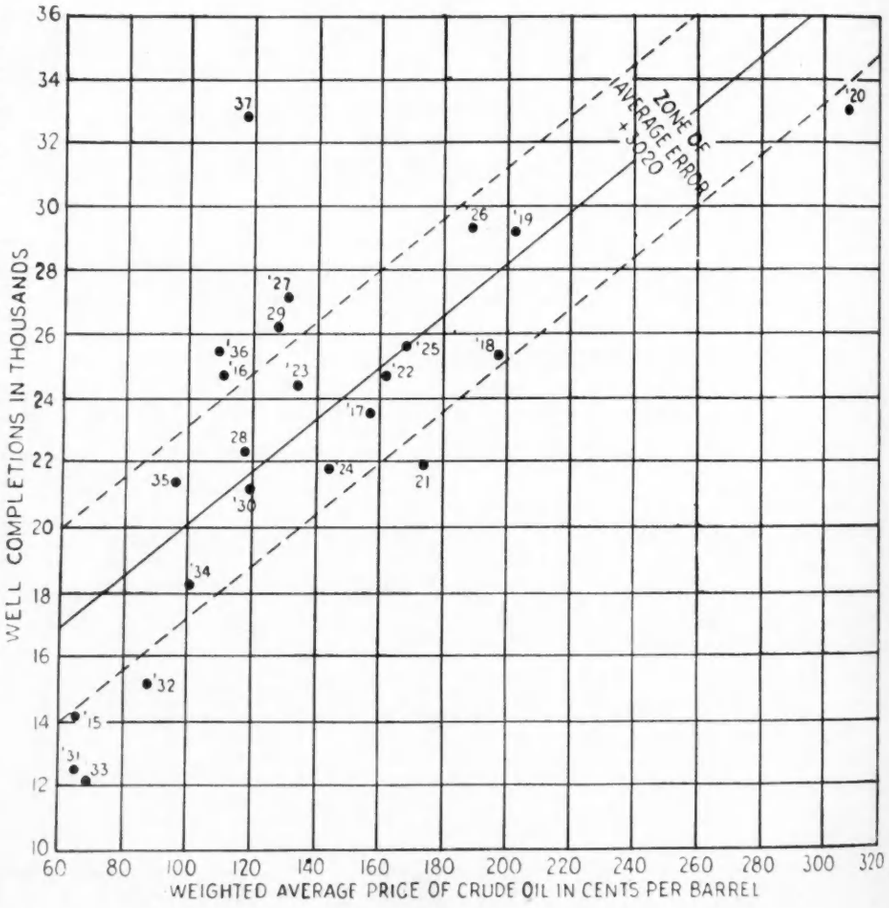

FIGURE 2

Scatter diagram showing relationship of well completions in the United States to the weighted average price of crude oil.

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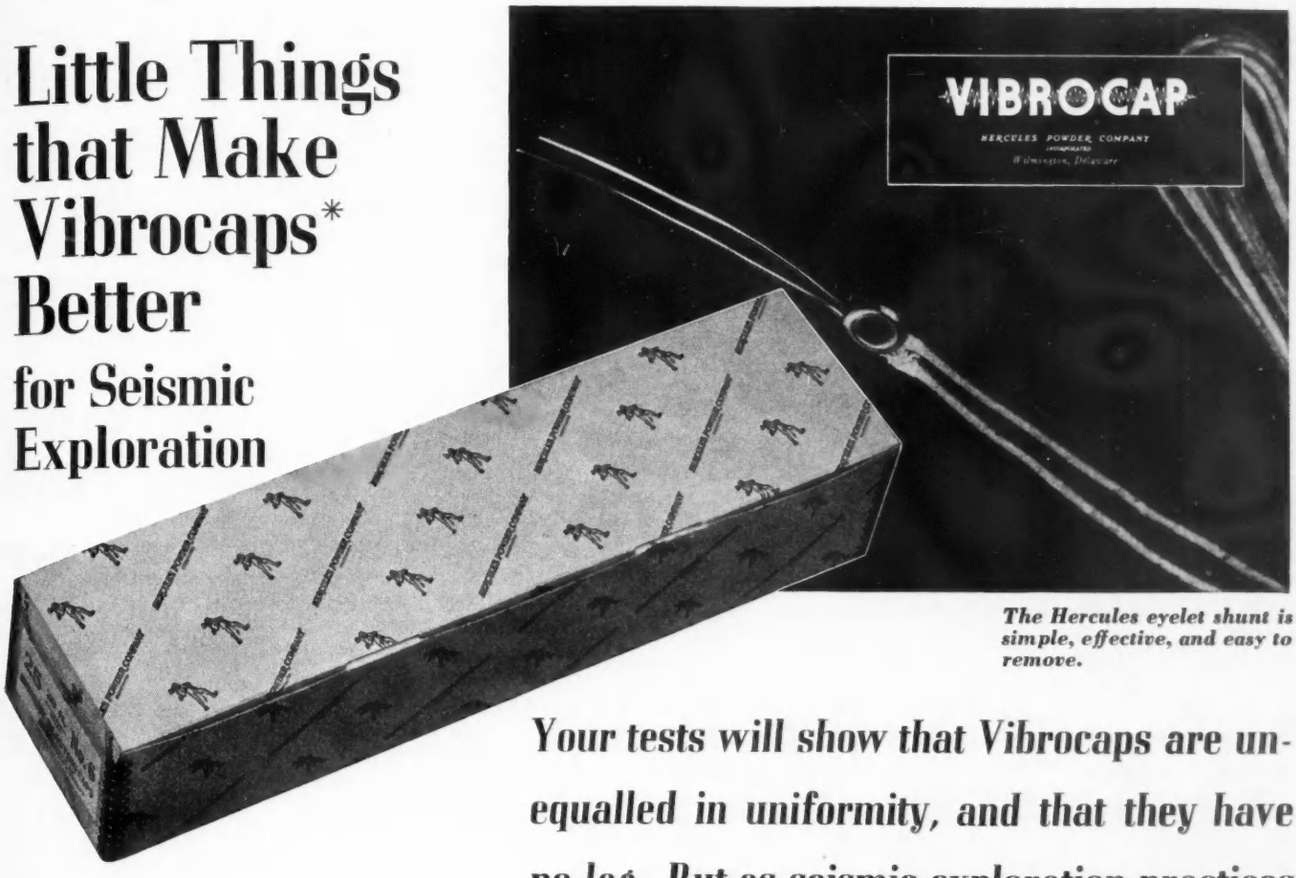

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TABLE 2

Production and well data for the East Texas field for 1936-1937, with projections for 1938-1942

	1936	1937	1938	1939	1940	1941	1942
Production in Thousands of Barrels per Day:							
Flowing wells	407	393	355	331	304	264	228
Pumping wells	51	74	105	129	156	161	172
Total	458	467	460	460	460	425	400
Number of Wells in Thousands (June 30):							
Flowing wells	18.1	18.7	18.5	17.6	15.2	12.4	9.5
Pumping wells	2.6	4.2	6.5	8.8	12.0	13.8	15.5
Total	20.7	22.9	25.0	26.4	27.2	26.2	25.0
Production per Well in Barrels per Day:							
Pumping wells	22.5	21.0	19.2	18.8	20.0	21.3	24.0
Pumping wells	19.6	17.6	16.2	14.7	13.0	11.7	11.1
Total	22.1	20.4	18.4	17.4	16.9	16.2	16.0

TABLE 3

Production and well data for Texas (excluding the East Texas field) for 1936-1937, with projections for 1938-1942

	1936	1937	1938	1939	1940	1941	1942
Production in Thousands of Barrels per Day:							
Flowing wells	375	563	526	557	590	664	725
Pumping wells	337	370	414	453	487	521	555
Total	712	933	940	1010	1077	1185	1280
Number of Wells in Thousands (June 30):							
Flowing wells	7.3	10.8	13.0	15.4	17.8	20.3	22.8
Pumping wells	35.4	38.9	43.5	47.7	51.3	54.8	58.3
Total	42.7	49.7	56.5	63.1	69.1	75.1	81.1
Production per Well in Barrels per Day:							
Flowing wells	51.4	52.1	40.5	36.2	33.1	32.7	31.8
Pumping wells	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Total	16.7	18.8	16.6	16.0	15.6	15.8	15.8

the proximate attainment of the marginal limit of 20 barrels per well in its unit allowable, with continued drilling in prospect. Figure 4 shows the projected relationship of flowing and pumping wells in this field. The number of pumping wells is expected to exceed the number of flowing wells in 1941. Either the field allowable will have to be raised or else the daily allowable per average well will have to fall below 20 barrels, as shown in Table 2. Perhaps some of the slack can be taken up by the pumping wells, if their capacity for production should decline, but a meticulous discrimination on the part of the regulatory bodies would have to be exercised in this event. The Sunday shut-down has temporized with the problem. The cessation of granting drilling permits or the revision of the marginal well law may receive consideration. All these possibilities render projection difficult, but Figure 4 presents current tendencies and serves to emphasize the difficult problem faced in connection with the proration of the East Texas field.

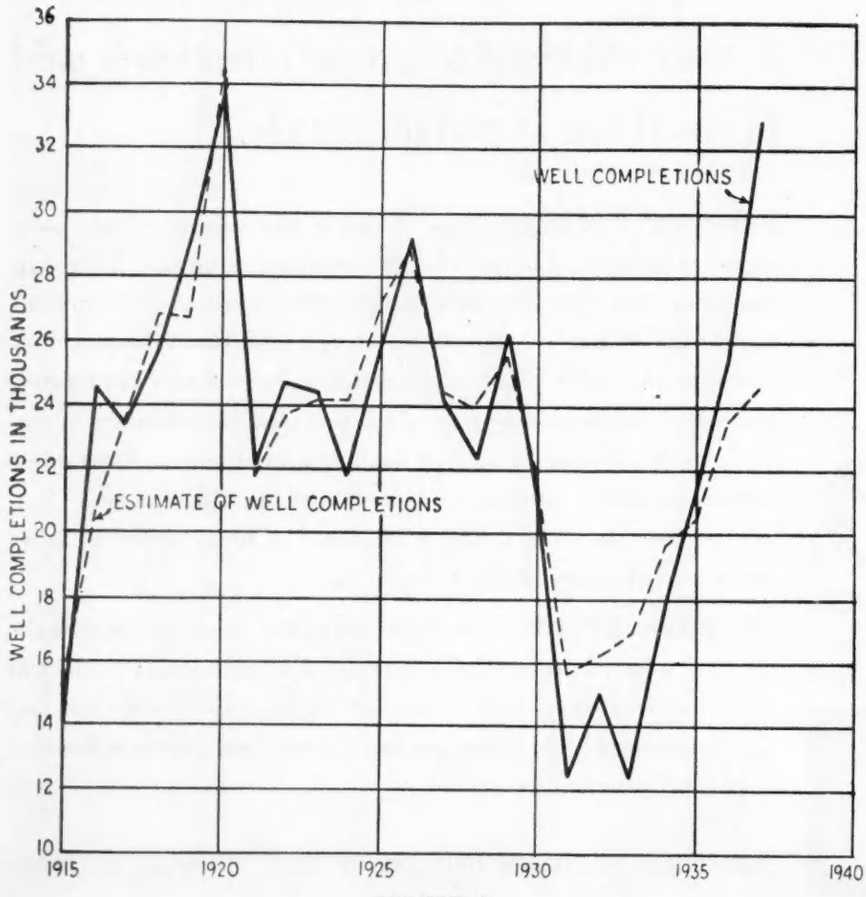

FIGURE 3

Well completions in the United States and estimate derived from related statistical series, by years, 1915-1937.

Figure 5 shows the results of the computations for the state of Texas excluding East Texas. The number and production of the two categories of wells—flowing and pumping—are shown separately. In calculating the indicated per-well allowable for flowing wells, a daily production of 9.5 barrels per well for all pumping wells was employed unchanged for the entire period. This figure is the estimated rate of production in 1936 and it is believed that no appreciable decline will take place in this figure, for the reason that new and vigorous pumping wells will be continuously coming into the list and the technique of pumping is undergoing continuous improvement. A small decline, however, if postulated, would not substantially affect the results. On the basis of the assumptions made, the indicated trend of the per-well allowable for flowing wells is as follows:

Indicated Daily Allowable Per Flowing Well in Texas, Exclusive of the East Texas Field

(In Barrels Per Day Per Flowing Well)	
1936	51.4
1937	52.1
1938	40.5
1939	36.2
1940	33.1
1941	32.7
1942	31.8

The trend shown above reflects a drastic decline in prospect. This trend could be greatly alleviated if customary spacing patterns were widened. If half the wells contem-

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plated were drilled on the basis of 20-acres per well instead of 10-acres per well, then the new drilling would be reduced by 25 percent. If the spacing of all the wells were doubled, then the number of new wells would be cut in half. The effect of progressive widening of the spacing pattern upon the per-well allowable may readily be calculated, with results as follows:

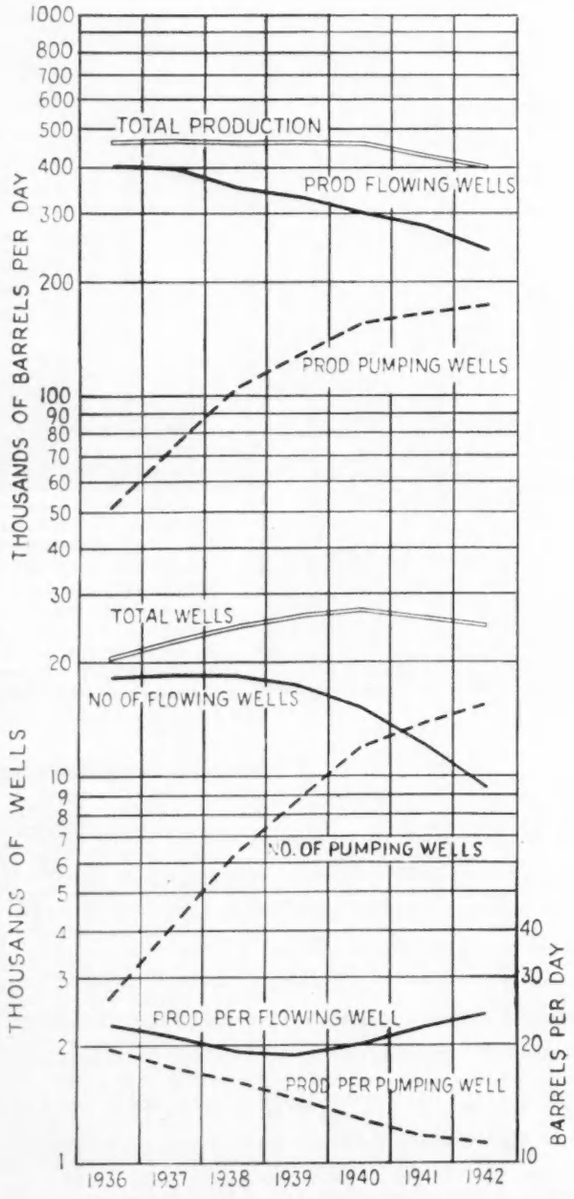
Indicated Daily Allowable Per Flowing Well in Texas, Exclusive of the East Texas Field, on Basis of Wider Well Spacing

(In Barrels Per Day Per Flowing Well)	1938	1939	1940	1941	1942
Probable	40.5	36.2	33.1	32.7	31.8
Basis 25% cut	42.1	39.0	36.6	36.9	36.4
Basis 50% cut	44.2	42.5	41.3	42.6	42.9

The foregoing table brings to a focus the economic advantage of wider well spacing patterns. Other measures are also available to the same end, such as the introduction of acreage factors into quota calculations, the furtherance of unit operation, and the like. The arrest of the declining per-well allowable, especially in Texas, is no longer an academic problem; the stability of the industry itself is involved.

FIGURE 4

Estimated production, number of wells, and production per well in the East Texas field, by years, 1936-1942.



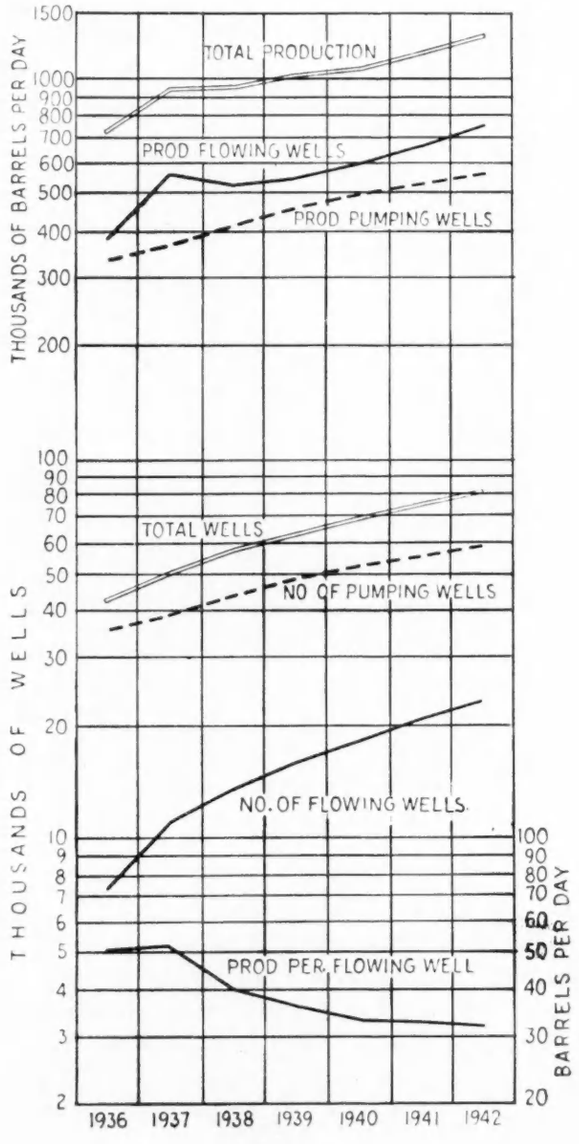
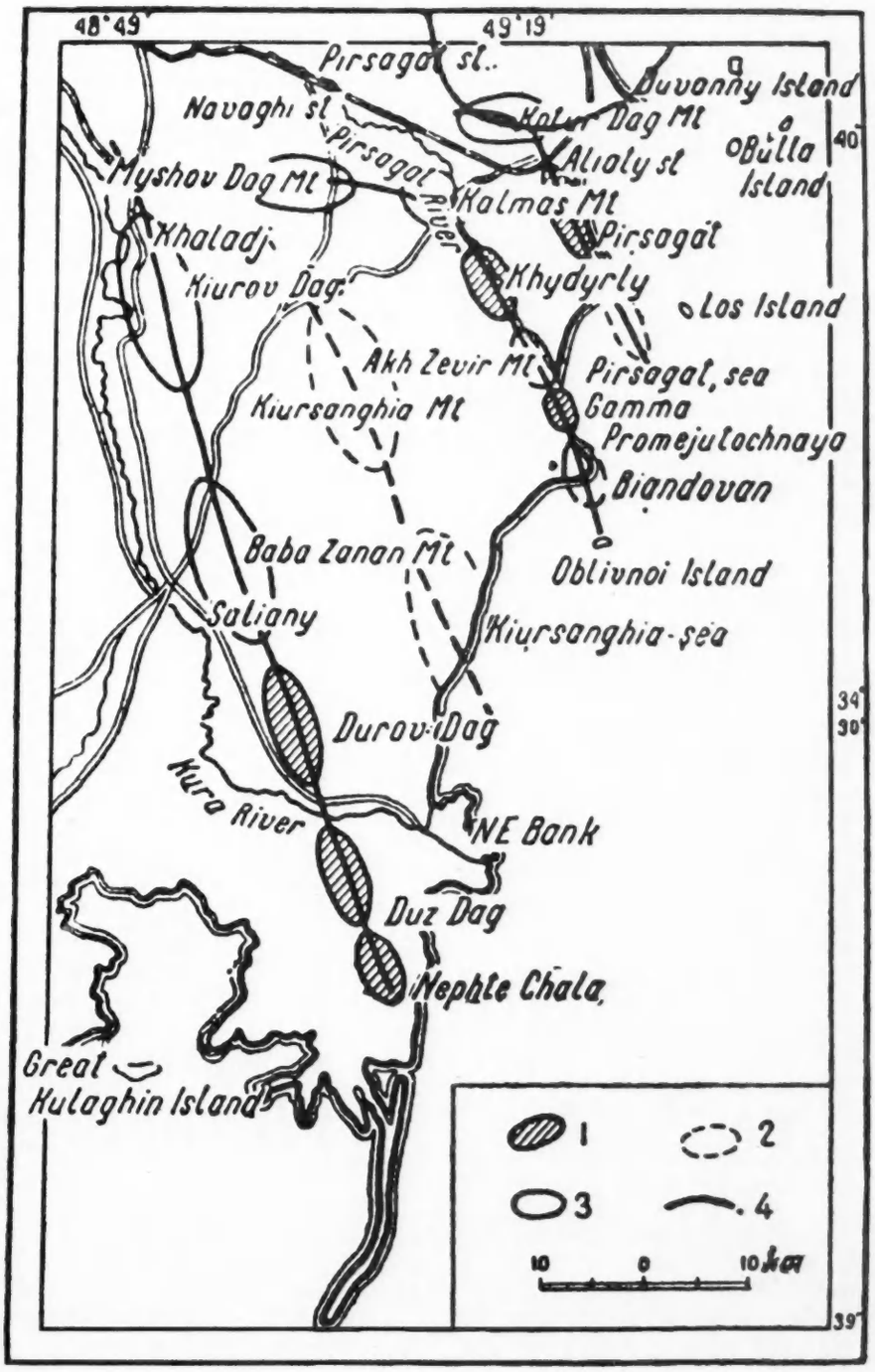


FIGURE 5

Estimated daily production per flowing well in Texas (exclusive of East Texas) by years, 1936-1942, together with related data.

How Much Crude Reserve Has U. S. S. R?

By L. DAVID WOSK, Petroleum Engineer



PART 4

Eastern Kura Plains Fields

FIELDS and untested structures of the Kura Plains area in Azerbaijan, Russia, differ somewhat from those of the Apsheron Peninsula. Their similarity lies in abundant gas and oil seepages. The plains are montonous, devoid of vegetation or life and rise but little from sea level. The northern limits may be associated approximately with the southern limits of the Kyzyl Tepe field.

Stratigraphically, the area differs from Apsheron slightly. The surface is reperesented by ancient Caspian terraces, Apsheronian formations of a thickness ranging from 800 to 1100 meters, are found on the crest of most structures.

The Apsheronian is oil bearing in Nepthe Chala and is considered potentially so in many other structures. The Akchaghylian, resembling the volcanic ashes of the Apsheronian, is 125 meters thick. The Productive formation is generally similar to that already described in the Apsheron Peninsula, differing, however, in that in the Kura Plains region it reaches greater thickness, has a predominance of clay beds and the sands are fine rather than

FIGURE 17

Tectonic generalized map of the Kura Plain. 1—prospected objects; 2—supposed objects; 3—objects to be prospected; 4—tectonic lines.

A. Y. Krems, chief geologist of the oil industry of U.S.S.R., who heads both prospecting and exploitation work. Snapshot taken by the author on his tour of Russian oil fields.

coarse grained. The Productive formation crops out in some folds of this region. The structures follow definite trends that do not seem to have ring-like characteristics, although many folds branch. Faulting is common, reaching in some instances, amplitudes of several hundred meters.

Mud Volcanoes

Mud volcanoes, reaching tremendous size, may be observed here. Some of these mud volcanoes show gas, and upon one the author observed oil seeps. It is interesting to note that in the mud volcano breccia, sample of saturated Productive, Maikop, as well as lower horizons were observed, indicating possibilities below the Productive. There are at least 4 definitely established lines of folding marked by mud volcanoes. Upon three of these lines productive fields have been discovered.

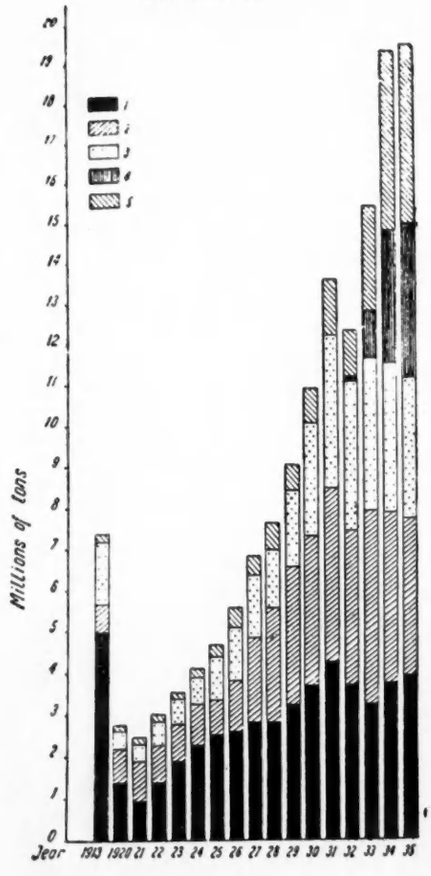
Most of the structures of the area are covered with a mantle of recent soil requiring methods other than surface geology to detect and detail them. Geophysical work is being extensively carried out, supplemented by core drilling. Following are the producing fields, as well as those being explored:

I. Shikhy Kaya

Shikhy Kaya is a large north south elongated, complex structure 8 km. long and 2 km. wide, lying approximately 10 km. west of Kyzyl Tepe. Isolated elevations on this structure, rising to heights of nearly 130 meters above the plains, represent remnants of an old mud volcano. In the arch of the fold, the Productive formation has been eroded 400 meters. There have been five tests drilled on the south end of this structure which have encountered large flows of dry gas. To date, they have been unable to penetrate through the gas horizon. Tests now under way are attempting a depth of 1500 meters, or about 4935 feet, anticipating oil in the lower Productive series. Wells drilled in the area indicate that the Productive series is up to 2500 meters thick with only 30 to 32 percent fine grained sand, the balance being shale.

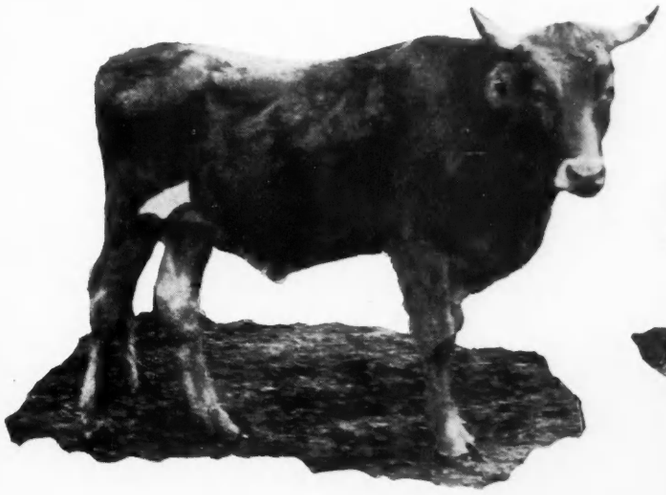
In this area, the Maikop contains a sand bed 300 meters thick in which shows of oil have been found. The Spirialis formation, just above the Maikop, contains over 100 meters of sand believed to be oil bearing. Flank wells anticipating oil in these are now being drilled. In the opinion of the author, production should be found somewhere on this structure, and while the formations are not as sandy as those in the Apsheron Peninsula, their added thickness will make for large recoveries if production is found. Due to the complex nature of this structure as well as to its lack of symmetry, the location of oil may be difficult. One well, at a depth of 800 meters, was testing shows of oil and seemed favorable for production at the time the author was in the field. Technique in these areas (chemically treating muds, etc.), which the Russians are slowly

FIGURE 18

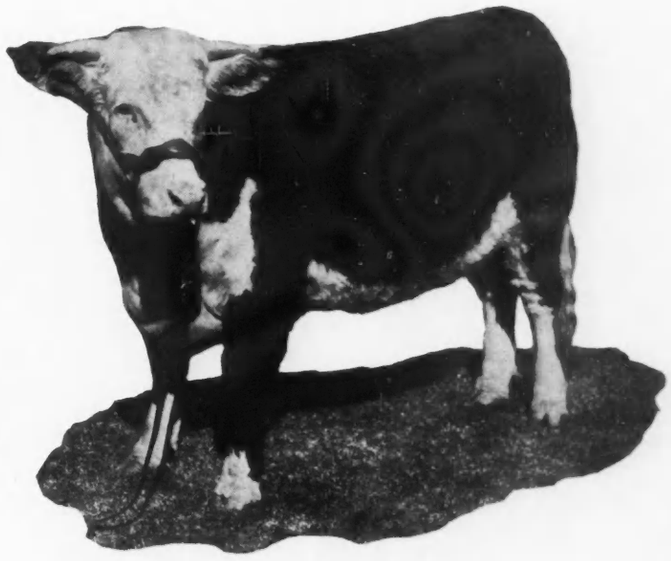


AZERBAIJANIAN OIL FIELDS

1—Balakhany-Sabunchy-Romany fields (Lenineft); 2—Surakhany field (Ordjonikidzeneft); 3—Bibi Eibat field (Stalinneft); 4—Kala field (Azizbekovneft); 5—Other fields.



BOTH STEERS—



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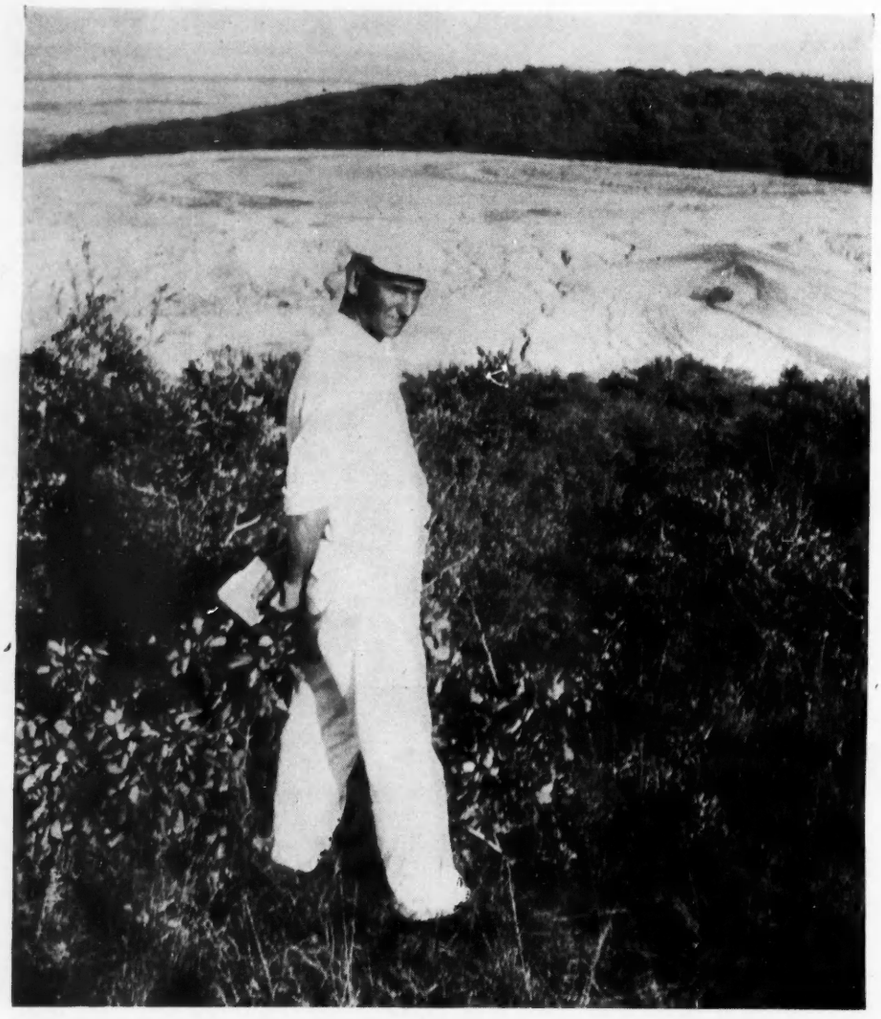

M. I. Varentsov, Moscow Oil Institute, specialist on Caucasian geology, standing in front of the Shugo mud volcano.

adopting, will make the handling of these gas pressures easier.

II. Miadjik

This is a small complex fold with the Productive formation exposed, lying southwest of Shikhi Kaya. Of 16 wells drilled on this structure, five have been abandoned because of their inability to get through the gas, and 11 are testing at depths of 700 to 800 meters. One well on the flank penetrated 2500 meters of Productive formation.

Gas found at 700 to 800 meters on the crest has a shut in pressure of 80 to 85 atmospheres. These wells are not being produced, but are shut in after tests. (Gas is very dry, 95-6 percent methane, 2-3 percent carbon dioxide).

Muds Used

In this area (150 hectares estimated in the pool) the drilling mud used has a specific gravity of 1.2 to 1.25 natural and 1.7 to 1.8 when loaded with barite for normal drilling. In cavy materials, the specific gravity is increased to 2.2 to 2.3. Tannic acid, sulphates and brown coal are used to treat these muds and in the past have given good results.

Possibilities of oil production on this structure are not very good, in the author's opinion, and the structure is being developed for gas to be used in drilling and repressuring of other areas.

III. Pirsagat Oil Field

Pirsagat field, on the Caspian coast, is located southeast of the Miadjik structure on the first line of folding of the Kura plains. It is a large complex structure, that has been discovered as a result of geophysical and core drilling work. Due to the large faults, with resulting caving in wells drilled adjacent to them, the development has been very slow on this structure. The oldest rocks on the structure are the lower Apsheronian with a full section of the Productive present.

Three producing horizons have been opened. The second Pirsagat sand was discovered in February, 1936, at 1255 meters, with an initial production of 300 to 350 tons per day. To date, there are 15 producing wells in all three horizons with an average initial production of 200 to 500 tons per day each. The pool is producing only 100 tons per day and has been on production since January, 1937. Adequate information is not available as to the type of oil or the proven area, though the latter seems to be large.

Shale Predominates

The section of the Pirsagat is not comparable to that in the Apsheron fields, though extremely thick, being chiefly shale. This seems to be a condition that will predominate in the Kura Plains fields.

While the Productive formation has been penetrated over 2000 meters, it has not been bottomed. The upper 800 to 900 meters of formation contain considerable gas and water. The first Pirsagat horizon has not been adequately tested, though good shows were obtained in the first wells drilled. The second sand, that is being produced, has a gas cap 500 meters high.

PARTS 1, 2, and 3 of Wosk's study of Russian reserves, the first of which appeared in the February 21 issue of The OIL WEEKLY, have covered a number of areas. Starting off with an outline of Academician I. M. Gubkin's claims regarding Russia's crude resources, the author then took up in detail fields comprising such general areas as the Permian Basin, Bashkirian region, Kuibyshev region, Azerbaijan, the Apsheron-Kabristan zone, Lok Batan, Western Kura, Kirovabad, Fore Talyzhyan, winding up with a discussion on Bibi Eibat. Production practices, engineering and outlook were covered.

Part 4, published herewith, begins with a discussion of Eastern Kura fields and gives more information on the great Azerbaijan district.

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Total Azerbaijan

	PRODUCTION (thousands of tons)					
YEAR	1913	20-21	24-25	28-29	34	37
Old, proven areas	....	....	228.8	1052.1	9702.2	.....
New areas	....	2457.3	4433.8	7631.3	9480.7	.....
Total	7384	2457.3	4662.6	8683.4	19,182.9	20,450. (plan)
Completed Wells: Total	....	.....	239	485	711	1,393. (plan)
Drilling (thousands of meters) Total	17.18	3.4	11.8	320.5	790.9	1,716.1 (plan)

The oil-water content is 600 meters below this. After the lower producing sands were developed, the upper were passed up. The first deep wells were located in 1932, though were not completed due to caving.

Drilling and production methods in Pirsagat seem to be better than in most of the pools observed. The pool is electrified throughout, even for drilling, and heavy rotary equipment is used.

Field Practice

The casing program is as follows:

Twenty-two meters of 22-inch conductor pipe; 200 meters of 14-inch; 1100 meters of 10-inch; 1500 meters of six-inch (the oil string may be longer). Due to heavy gas and caving material in the section, mud is weighted to 2.2 to 2.3 at viscosity of 12 to 15 seconds. Barite, tannic acid and sulphates are used. The derricks are large, heavy duty wooden type. Machinery is Soviet in manufacture and all modern control devices are used. The field seems to be developing well and is handled much better than those of the Apsheron Peninsula. Electrical log surveys on inside wells and coring on all extension wells is the rule. Wells are brought in under control and not permitted to flow wild as was the old practice.

Pirsagat structure extends under the sea for a distance of five to six kilometers as determined by core drilling from boats. It was found that the top of the structure is deeply eroded into the Productive series and that oil may be expected at very shallow depths. The depth of the water at this point is 20 to 30 meters. Drilling on the sea structure is scheduled to begin soon. There are, at present, six active wells drilling on the structure.

In addition to Pirsagat, located on the first line of folding, the

Total Azerbaijan

	Production (millions of tons including natural gas equivalents)	Footage Drilled (thousands of meters)
1913	7.4	171.7
1920	2.5	3.4
1925-6	5.6	200.8
1927-8	7.7	260.6
1932	20.5	1,322.7
1937 (plan)	22.0	1,716.1

Promejutchnaya structure, located where the second line of folding reaches the seacoast, was being tested in August, 1937, and was showing for a producer. The electrical log of the well seemed favorable for production.

Further south, on the fourth line of folding, the field of Nephte Chala, which is producing 60 to 70 tons per day from the Apsheronian beds, is expected to be a prolific producer in the Productive horizon. In November, 1936, well No. 84 started flowing from the upper Productive at the rate of 200 tons per day.

Possibilities Not Scratched

It is evident that the possibilities of the Kura Plains have not yet been scratched, and while it is impossible to place an estimate on the ultimate production, one may, with a great deal of safety, estimate that it will be large.

Azerbaijan district produces about 72.5 percent of the total oil production of the U.S.S.R. On the west, these fields are connected with the producing areas of Georgia an on the north and northwest, with those of Daghestan. The city of Baku, approximately 900,000 population, is the oil center of this area, and may easily be called the oil center of the U.S.S.R. It is only in recent years that silk mills, textile mills, clothing factories and canneries have sprung up to supplement the petroleum industry. This industry concentrated here, in addition to its productive fields, consists of huge refineries, pipe line and tanker terminals, oil field machine building plants, schools and institutes to train various technical workers, and the general directive headquarters of the geological and development phase of the producing departments.

The following table, illustrating production trends in old and new areas, as well as increased drilling footage in Azerbaijan, including Kura Plains is very interesting. It illustrates a growth of production in new areas necessitating, however, great increases in drilling.

The following table sums up the most recent production and drilling figures available to the author. They are for 3 daily periods of August, namely 8, 13 and 18 of August, 1937, showing by trust and fields the production and meters drilled:

(*To be continued*)

Azerbaijan District by Fields and Trusts—August 8, 13, 18, 1937

	Production (Tons)			% Plan (Production)			Drilled (Meters)		% Plan Drilling	
	8th	13th	18th	8th	13th	18th	10th	13th	10th	13th
Kirovneft (Sulu Tepet, Binagady)	1,265	1,265	1,210	101.2	101.2	96.8	63	154	26.9	65.8
Kaganovneft (Kara Chukar)	6,430	6,475	6,475	100.5	101.2	101.2	327	593	46.4	84.1
Molotovneft (Shubany, Lok Batan, Puta.)	6,785	6,860	6,760	95.6	96.6	95.2	543	432	98.4	78.2
Ordjonikidzneft (Bolokhany)	10,420	10,570	10,400	94.7	96.1	94.5	260	424	88.8	140.4
Azezbekovneft (Kala.)	13,200	13,100	13,200	94.3	93.6	92.3	911	1,000	91.5	100.4
Lenineft (Surakhany)	11,735	10,425	11,200	93.8	92.3	89.7	425	510	76.9	81.5
Stalineft (Bibi Eibat)	10,425	11,396	10,425	92.3	91.2	92.3	495	445	79.1	80.4
Artemneft (Artem Island)	2,105	2,105	2,105	81.0	81.0	81.0	142	94	51.1	33.8
Alatneft (Pirsagat)	332	227	227	73.8	50.5	50.4	113	47	68.1	28.3
Kergezneft (Kergez.)	325	350	350	42.7	46.0	46.1	98	33	38.1	12.8
Aznefti (Exploration only)	.....	.....	.....	.....	.....	.....	74	9	23.0	2.8
Grosneft (Merzany?)	29	13	13	96.9	43.3	43.3	78	29	182.5	72.5
Total	63,051	62,788	62,378	93.6%	93.2%	92.6%	3,532	3,769	70.2%	74.9%

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No troublesome steam turbines or electric motors are required. The flow of mud returns from the well provides power to rotate the screening drum. Shale and cuttings are thoroughly cleaned and fed out the front of the machine by spiral vanes. Cleaned mud flows out either side. For extremely heavy going, a mud motor, operated from a line to your pump, accelerates rotation when necessary.

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MEN IN THE INDUSTRY'S NEWS

WILLIAM J. QUIGLES, district manager for United Gas Pipe Line Company's Monroe, Louisiana, division has been transferred to Houston where he will be superintendent of drilling and production operations for Union Producing Company. J. G. Hicks has been made manager of the Monroe district, being transferred from Iowa, Louisiana.

R. P. PHILLIPS, with Stanolind Oil & Gas Company at Hastings, Texas, recently left that company to join Bennett Petroleum Corporation as field superintendent.

C. P. LOUWERSE, chief engineer of Compania Mexicana de Petroleo "El Aguila" S. A. at Tampico Mexico, was the guest of honor at a farewell dinner tendered by 20 of his business associates recently. Louwerse has gone to Aruba, Netherlands West Indies, to take charge of the construction of an asphalt plant at the Royal Dutch Shell's refinery on that island. He expects to be absent from Mexico about a year.

JAMES A. RUSH, drilling contractor of Houston, and H. Dudley Coles of Beaumont, formerly superintendent of drilling and production for Mexican Gulf Oil Company at Tampico, have returned to their homes after a 10-day trip to Mexico.

WILLIAM WARDNER, JR., assistant California umpire, attended the regular meetings held by field committees this week at Taft and Bakersfield. Wardner succeeded R. E. Allen, some months ago.

BRUCE ANDERSON, member of the group of scientists that sailed to Central America with J. R. Pemberton, is returning this week aboard the steamship "Virginia," to re-enter Stanford, where he is majoring in petroleum geology.

W. M. SAXON, production engineer for Pure Oil Company in the Illinois basin area, was receiving the congratulations of friends last week on the birth of a seven-pound, eleven-ounce daughter to Mrs. Saxon in Evanston. She has been christened Anna Martha.

W. S. ZEHRUNG, president of The Pennzoil Company, termed business "not as bad as currently reported" in an address before the Pennzoil Employes' Club in Oil City, Pennsylvania, last week.

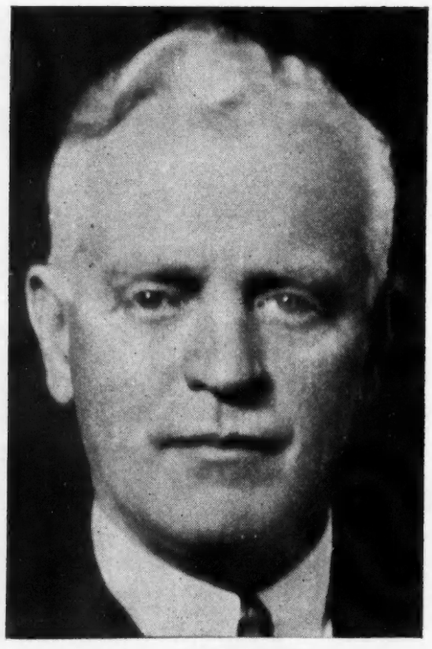
MAX LEVENSON, field superintendent for Mammoth Producing & Refining Company in the Illinois basin area, is vacationing in Miami, Florida.

NELSON SPENCER, president of Home Oil Company, engaged in development in Alberta, returned to Vancouver, British Columbia, last week following a visit to Calgary.

ROY D. LAW, Toronto, Ontario, director of Marine Petroleums, Ltd., which has holdings in Southern Turner Valley, Alberta, was in Calgary last week and announced that work on the company's first well would start immediately.

A. C. GALBRAITH, identified with Union Oil Company of California for the past 22 years, was elected a vice president of the company at the recent organization meeting of the board of directors following the annual meeting on March 1, 1938.

Galbraith started with the company as traveling auditor in the comptroller's department, and since that time has had a wide experience in various phases of company activity. In 1923 he was appointed manager of advertising, and in 1931 became assistant vice president. During the past few years he has been in charge of industrial relations and personnel, and in his new capacity will continue to direct this important work.



A. C. GALBRAITH

M. T. HARWELL has joined the scouting staff of the Mid-Continent Petroleum Corporation in West-Central Texas, making headquarters at Abilene.

E. W. SHAWVER, president of the Kansas Independent Oil & Gas Men's Association, headed a delegation that called upon Governor Walter A. Huxman March 12 to discuss methods of improving the Kansas oil market. In the party were H. A. Meyer, managing director of the association; Jack Vickers, of Vickers Petroleum Company, and Tom Palmer, of Palmer Oil Corporation.

E. E. FISCHER, formerly with Markham and Fischer, attorneys, Houston, has opened offices in the Shell Building. He has been here about a year, coming from Tyler, Texas.

C. E. NEWELL, field foreman for Continental Oil Company in the Burkburnett district, has been transferred to Basile, Louisiana, for duty in the Tepetate field.

SHAPLEIGH G. GRAY, for eleven years with the geological department of The Texas Company, nine years of which was in the Shreveport division, resigned, effective March 15 to accept a position with Tide Water Associated Oil Company at Houston.

J. H. PRESSLEY, manager of the land and geological departments of Sun Oil Company in the Dallas division, visited points in Mississippi and Alabama, where the company holds extensive wildcat acreage, and later attended the geological convention at New Orleans.

R. A. BROWN, SR., who brought in the original crude well in Turner Valley, Alberta, returned to Calgary from Toronto last week and announced organization of Producers' Crude Corporation, Ltd., to take over interests of Brown, Moyer and Brown in Royal Crest, the Four Star Petroleums, Ltd., and Three Point Petroleums, Ltd., Turner Valley producing companies, Inter-City Drilling Company, and Southstream Company. The new company will drill two wells immediately in Turner Valley, with another two to be drilled upon their completion. Operations will not be confined to Turner Valley, but will extend to other structures.

PAUL G. BLAZER, president of Ashland Oil & Refining Company, reported last week that the company had drilled 14 new oil wells during the past year and purchased an additional 95 small producers, bringing the company's holdings to 1138 producing wells.

E. A. WETMORE, auditor of the South American subsidiaries of Gulf Oil Corporation, has returned to his headquarters in New York with Mrs. Wetmore, following a two months' honeymoon in Venezuela.

JUDSON G. TAYLOR, toolpusher for Mexican Sinclair Petroleum Corporation at Reventadero, state of Veracruz, Mexico, is in the United States on vacation

HERBERT V. WILSON, with Carter Oil Company at Tulsa, has been transferred to the land department at Mattoon, Ill.

E. O. THOMPSON, member of the Texas Railroad Commission, and V. E. Cottingham, the commission's director of production, last week stopped in Houston on their way to the A.A.P.G. convention in New Orleans.

W. S. APPLEGATE, director and drilling superintendent for Kermac Petroleums, Ltd., engaged in production activity in Alberta, left Calgary for head offices of the company at Victoria, British Columbia, last week.

WALTER S. CAMPBELL, president of Petroleum Producers' Association, returned to Calgary, Alberta, last week following an extensive tour of East Canadian centers at the adjournment of federal tariff board hearings at Ottawa last month. He expressed confidence that Turner Valley's

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L. D. 15 Local 6481

ODESSA
L. D. 683 Local 684

TULSA
L. D. 681 Local 5-3204

OKLAHOMA CITY
L. D. 785 Local 7-2725

WICHITA
L. D. 59 and 116
Local 2-1431 and 2-1432

AND BRANCH STORES

crude marketing problems would be solved and that development would go on unhampered by production restrictions. While in the east, he conferred with Prime Minister Mackenzie King and federal cabinet ministers, and gave several addresses before boards of trade and service clubs on Alberta's growing oil industry.

N. V. DUNCAN, of Duncan Brothers O" Co., is expected to return to Flora, Illinois, shortly from Old Mexico, where he is vacationing.

F. L. MARTIN, vice president of Sunray Oil Corporation, Tulsa, has returned to headquarters following a visit to K.M.A. field.

FRANK SHAFFER, engaged in seismograph work in Illinois for The Texas Company for the past year, has been transferred to the northern Permian basin, where he will act as recorder for one of the company's crews. He will make headquarters in La Mesa, Texas.

R. R. BOYD, official of Richfield Oil Company, this week was elected chairman of El Segundo field committee representing Central Committee of California Oil Producers, succeeding H. H. Maddren, who resigned due to inability to attend all meetings regularly. Jack Dyer, Ohio Oil Company, was elected vice chairman, succeeding E. D. Hardison, resigned.

BOB HUME, who handled drilling operations in Wyoming for Wood-Callahan Oil Company, during the past year, is back in Bakersfield.

B. ASLAN-FINLAY, vice president of Standard Franco-Americaine, has been made Officer of the Legion of Honor.

D. D. SPARKS, formerly of Houston, has been added to the geological staff of the government organization undertaking exploratory drilling in Turkey.

DR. RICHARD E. SHERRILL, professor of geology at the University of Pittsburgh, will discuss "The Geology of the Oil and Gas Fields of the Tidioute Quadrangle" before a meeting of Pennsylvania producers at Oil City March 25. He will also discuss the future work of the state and geologic survey. The meeting is being arranged by C. B. McClintock, Oil City consulting geologist and petroleum engineer.

DIED:

FLOYD T. KINLEY, 33, of Tulsa, one of the two Kinley brothers who rose to fame throughout the oil industry for their achievements in extinguishing stubborn wild oil wells and fires, died in a hospital at Victoria, Texas, March 12, following injuries received while putting out a wild gas well near Goliad in Southwest Texas. Floyd, together with his older brother, Myron M. Kinley, had conquered nearly 100 oil well fires in South America, United States, Mexico and Roumania. Their most commonly used trick was to set off explosives to temporarily shut off the flow long enough to permit that fuel already in the air to burn out. While this was the most spectacular part of their operations, the most dangerous was in removing debris prior to shooting, and it was in performing this work that Floyd was injured. Following the accident, the well was controlled successfully under the direction of Myron, who resides in Houston.

JOHN H. STUART, 62, employe of Uscan Drilling Company, died March 10 at Kermit, Texas. Funeral services and burial took place at San Angelo.

EDWARD L. TAYLOR, JR., 68, who helped with the organization of Pure Oil Company in 1921 and served as one of its counsel until his retirement a year ago, died March 10 at his home in Columbus, Ohio, following an illness of several months. He served in the United States congress for three terms between 1904 and 1912. Surviving are one brother and a cousin.

HENRY J. STOLZ, 62, a vice president and director of Wadhams Oil Company since 1929, died March 16 at his home in Milwaukee. He had been manager of Bartles-Maguire Company prior to 1929 when that company and Wadhams Oil Corporation were merged. He had been chairman of the Wisconsin gasoline tax evasion investigating committee chosen in 1931 by leading oil companies of 13 central states.

DAN H. McQUEENEY, president of Eastern Producers Glycerine Company, and Ralph E. Mong, 40, former drilling contractor and for the past two years an oil well shooter in Eastern fields, were killed in an explosion at the company's plant at Bradford March 10. The explosion completely destroyed the plant, in which between 600 and 800 quarts of prepared explosive was kept, leaving a gaping hole six feet deep and 25 feet in diameter.

ESTILL S. HEYSER, 53, president of Heyser Drilling Company and Heyser, Heard & Clardy, Inc., producing unit, died March 12 in a Dallas hospital after a long illness. He had resided in Dallas since 1916, and specialized in water reservoir and flood control construction work prior to entering the oil business in 1924.

Labor

[*Continued from page 13*]

union—The Federation of Independent Refinery Workers of Nederland.

This group had applied for a charter several weeks ago, and Secretary of State Edward Clark had actually approved its issuance; however, prior to the time the copy was sent to the group, a protest was received from Harvey Fremming and other officials of the Oil Workers International Union, which is an affiliation of the C.I.O. These protests charged that all the larger companies which were seeking to evade the Wagner Labor Relations Act by getting state charters for local unions. As regards Pure Oil Company specifically, protests stated that the company had agreed with the NLRB to dissolve a company union at the Smith's Bluff Refinery and to interfere in no way with the workers in organizing.

Officials of the Nederland group replied that no violation of the Wagner act could be charged to them, as they had no legal assistance until approval of their charter by the secretary of state. They denied any violation of the act and asserted that they desired merely to form a union affiliate with neither the C.I.O. nor the American Federation of Labor. The mandamus action was filed with the Supreme Court.

Cancel Mexican contracts

Some slight hope is entertained in official circles that the Mexican oil tangle may be settled satisfactorily before long, despite the Federal Labor Department having cancelled work contracts of oil companies, action which laborites had requested. The department also ordered the firms to pay employees indemnification equal to three months salary each, a total sum of about $50,000,000. Companies were given five days in which to comply with the ruling.

Meanwhile, Mexican Eagle Oil Company voluntarily abandoned its offices and refinery at Tampico to the possession of workers. It was thought like action might be forthcoming from other involved concerns. Turning of the offices and refinery over to the union resulted when workers commenced grumbling because no wages were forthcoming March 18.

A threatened strike manifestation in which millions of persons throughout Mexico would participate has been scheduled for March 23. The strike would last six hours in protest against the oil cases.

Reports, that it protested to the Mexican government in behalf of Mexican Eagle Oil Company, were answered by the British legation with the comment that, as things have reached such a delicate stage, nothing can be said about the matter.

Oil activity in Mexico is so dull that but two drilling permits, one to the government's general oil administration and the other to a small independent operator, were granted in the past five weeks. Only one producer, a small one by an independent, resulted from completions in February, the three others being dry holes. However, February production held up pretty well, being, according to official estimates, 4,016,529 barrels.

First sabotage in the oil quarrel of Mexico is that of Tampico workers of the Mexican Eagle Oil Company, who are blocking exports by hampering loadings on tankers.

This action, starting with the company's tanker "San Antonio" which, after being able to stow only a portion of its cargo at one wharf, went to another pier but there found that it could not take on any oil. The tanker has only been able to load 7000 of the 90,000 barrels it was assigned. The company's tanker "San Amborisio," with an English crew had great difficulty in putting to sea with a small cargo. It carried Cornelius P. Lowers, superintendent of Mexican Eagle Oil Company's Tampico refinery who has been assigned a similar position at the company's Aruba, Venezuela, refinery. Loading of the company's tanker "Cornus" is completely blocked, it being opined that she must leave without the 70,000-barrel cargo she called for.

Association Activities

Permian Basin A.P.I. chapter holds meeting

"Success of a vocational training program lies upon the shoulders of the superintendents and foremen in acquainting their men with this type of education and in giving them an opportunity to participate," J. E. Heston, Cities Service Oil Company, Hobbs, New Mexico, told those in attendance March 12 at the Midland meeting of the Permian Basin Chapter of the American Petroleum Institute, Division of Production.

Heston's paper, first on a program presided over by K. L. Sappington, brought out that vocational training is just getting started in West Texas and stressed the help being given by the A.P.I., dwelling on the joint efforts of the institute, the state and federal departments and the local school authorities. He outlined purposes of vocational training in the oil industry as including the following: (1) to prepare an untrained man for some place in the industry; (2) to increase the worker's knowledge of his present job; (3) to increase the worker's knowledge of the industry with which he is connected in order that he may be better equipped to handle more responsible jobs; and (4) to equip the worker to become a better citizen.

The author wound up the paper with the suggestion: "Since the value of vocational training has been recognized by the petroleum industry for many of its workers, would it not be well to carry the program even farther? Other courses such as business management, foremanship, commercial law, business English and like might prove beneficial to the superintendents, foremen and engineers within the industry."

The program committee, under direction of H. L. Johnston, next presented "The Nebraska Tax Plan", by Frank G. Arnold, president of the Nebraska Federation of County Taxpayers' Leagues, who cited may specific ways by which economy could be effected in particular instances and urged every one of the 200 listeners to become an agitator for good government and reasonable taxes, which, he contended, are so closely related as to be almost synonymous.

Glenn Staley, proration umpire of Hobbs, New Mexico, then presented a paper entitled "Evolution of the Technical Man in the Exploration and Production Branches of the Oil Industry", coming to the conclusion that the technical man should continue to concentrate upon problems where economic and efficient results are obtainable and he should not become entangled and lost in a maze of interesting but non-profitable data. "His co-operation with all departments and personnel should be whole hearted and his every report and decision generously mixed with common sense.

"A true production engineer is one who can apply the principles of mechanics, hydraulics, thermodynamics and other physical arts to the efficient and economical recovery of oil. The chief duties of the production engineer should be to give technical service to the production field men and executives and not to assume all management, authority and responsibility for field operations. The success of scientific and technical departments of any oil company depends upon willing co-operation between field forces and those departments."

Rex E. Rader, Stanolind Oil & Gas Company, Hobbs, New Mexico, concluded his paper, "Formation Packers", with the observation that the setting of formation packers serves as an economical method of shutting off excessive gas and water where suitable packer spots exist in the formation. In turn the resulting conservation of the natural reservoir energy will be responsible for longer natural flowing life of the wells, use of conserved gas for gas lift purposes during the later life of the field, greater ultimate recovery per acre, and lower lifting cost for the field.

Rader discussed common types of packers for various purposes, formational conditions necessary for a packer shut-off, typical shut-offs by setting formation packers, gas conservation, water shut-offs, and choice of formation packers.

It was moved and seconded that a committee of A.P.I. members be appointed to carry on vocational training work in West Texas as it has been carried on in New Mexico. Earl Griffin, Phillips Petroleum Company, Midland, was appointed to head the committee.

East Texas A.P.I. meeting April 12

The next regular meeting of the East Texas Chapter of the American Petroleum Institute, Division of Production, will be held in the high school auditorium at 8:00 p.m. Tuesday, April 12, 1938, in Kilgore, Texas.

W. L. Childs, vice president and general manager of Reed Roller Bit Company of Houston, will speak on the subject "The Petroleum Industry and its Relation to Business."

The second speaker on the program will be J. L. Risinger, safety director for Magnolia Petroleum Company at Dallas. He will speak on the subject "Safety in Oil Field Operations." His paper will be supplemented with a demonstration of various pieces of safety equipment.

As usual the A.P.I. dinner will be held at the Kilgore Hotel beginning at 6:15 p.m. Tickets for this dinner are now on sale by W. S. Morris, Box 56, Kilgore, at $1.25 each.

Michigan Refiners Association asking freight rate adjustment

B. J. Skinner, president and general manager of the Mid-West Refineries, Inc., Alma, Michigan, has been elected president of the newly organized Michigan Refiners Association, and Herman Berg, former Detroit representative of Michigan Central Railroad Company, named executive secretary.

Offices have been opened in the State Bank Building at Alma.

Other officers of the association include, vice president, D. E. Foster, vice president and general manager McClanahan Refineries, Inc., St. Louis; treasurer, Reid Brazell, vice president and general manager Leonard Refineries, Inc., Alma.

The association, Berg said, will concentrate immediately on securing more favorable rail rates for Michigan refined products. Competitive rates, never adjusted to the petroleum industry in Michigan, stand today as the largest single wall to expansion of the Michigan refining industry, Berg declared.

Program announced for A.P.I. at Fort Worth

Program of the spring meeting of the Southwestern District, Division of Production, American Petroleum Institute, which is to be held at Fort Worth, Texas, Thursday and Friday, March 24 and 25, has been announced as follows:

Thursday, March 24

8:00 a.m.—Breakfast meeting for officers of Southwestern District, presiding officers, and authors, Dining Room A, Blackstone Hotel.

9:00 a.m.—Registration, Mezzanine floor. Registration headquarters will be open on the Mezzanine floor, Blackstone Hotel, at 3:00 p.m., March 23, 1938. A registration fee of $1.50 will be charged each registrant, to cover incidental costs of meeting and advance copies of papers. A complete report of all discussions, including reports of other district meetings, will be sent to each registrant.

10:00 a.m.—Morning session, Main Ball Room, Mezzanine floor, Blackstone Hotel. Presiding: W. E. Schoeneck, The Ohio Oil Company, Shreveport. Associate chairmen: L. A. Ogden, The Pure Oil Company, Fort Worth; H. M. Staggs, The Atlantic Refining Company, Dallas.

Address of Welcome, Amon G. Carter, Fort Worth.

Response, A. G. Levy (Crown Central Petroleum Corporation, Houston), district chairman.

"Progress in Oil Industry Vocational Training in Texas," J. R. D. Eddy, Texas State Board for Vocational Education, Austin.

"Individual Training in Accident Prevention," A. W. Breeland, Lone Star Gas Company, Dallas.

Announcements.

2:00 p.m.—General session, Main Ball Room, Mezzanine floor, Blackstone Hotel. Presiding: A. G. Levy.

"Administration of the Oil Industry in New Mexico," Hon. H. M. Dow, lieutenant-governor, New Mexico, Roswell.

"What the Oil Industry Means to the Southwest," W. R. Boyd, Jr., executive vice president, American Petroleum Institute.

"The Growth and Importance of Natural Gas in the Southwest," John S. Ivy, vice president, Union Producing Company, Houston.

Announcements.

7:30 p.m.—Stag smoker—Shady Oaks Lodge on Lake Worth. (Guests of Amon G. Carter.) All registrants invited to attend.

Friday, March 25

8:00 a.m.—Breakfast meeting for officers of Southwestern District, presiding officers, nominating committee, and authors. Dining Room A, Blackstone Hotel.

9:30 a.m.—Morning session, Main Ball Room, Mezzanine floor, Black-

stone Hotel. Presiding: W. S. Morris, East Texas Engineering Association, Kilgore; associate chairmen: C. E. Reistle, Jr., Humble Oil & Refining Company, Houston; H. H. Hardison, Standard Oil Company of Texas, Midland.

"Well Treatment After Perforating," Bruce Barkis, Lane-Wells Company, Los Angeles.

"Pressure Production Relationship—East Texas Field," S. E. Buckley, Humble Oil & Refining Company, Houston.

"Problems in Design of a Salt Water Gathering System," J. E. Bailey, Tide Water Associated Oil Company, Kilgore.

Election of district officers and advisory committee. Report of nominating committee.

Announcements.

2:00 p.m.—Afternoon session, Main Ball Room, Mezzanine floor, Blackstone Hotel. Presiding: E. A. Wahlstrom, Goldsmith Pool Engineering Committee, Midland. Associate chairmen: C. G. Staley, Lea County proration office, Hobbs, New Mexico; W. A. Alexander, Shell Petroleum Corporation, Iowa, Louisiana.

"The Permian Basin and Its Drilling and Production Problems," W. T. Doherty, Humble Oil & Refining Company, Midland.

"The Use of Drilling Time in Determining Completion Practices —Goldsmith Pool," Max David, Landreth Production Corporation, Midland.

"Marine Drilling on the Gulf Coast," I. W. Alcorn, The Pure Oil Company, Houston.

Announcements.

7:30 p.m.—Informal dinner dance—Fort Worth Club. Tickets, $3 each. (This party is limited to 500. Out-of-town visitors are requested to make their reservations with R. B. Kelly, chairman, Fort Worth Committee on Arrangements, P. O. Box 2107, Fort Worth, as soon as possible.)

Special Notice to Visiting Ladies

A luncheon style show will be held in the Fort Worth Club on Thursday, March 24, at 12:30 p.m. Complimentary tickets will be furnished on request to Mr. Kelly.

National Oil Scouts to meet at Tulsa May 12-14

Annual meeting of the National Oil Scouts Association of America will be held at Tulsa May 12 to 14, preceding the opening of the International Petroleum Exposition. Lee A. Adams, Sinclair Prairie Oil Company, chairman of the executive committee announced the three-day meeting.

Following are chairmen for the convention: W. S. Arthurs, chief scout, Skelly Oil Company, convention chairman; Ralph Steinman, chief scout, Sinclair Prairie Oil Company, entertainment; Theodore Shaw, Sinclair Prairie Oil Company, annual golf tournament and Mrs. Ralph Steinman, head of the ladies' entertainment committee.

Chairman of the registration committee will be Harry Langspecht; L. E. Smith, National Petroleum News, publicity committee; Robert B. Curran, Carter Oil Company, music committee, and Clyde Bebee, Shell Petroleum Corporation, housing committee.

Meter conference scheduled at Oklahoma University

The School of Mechanical Engineering, University of Oklahoma, in cooperation with American Society of Mechanical Engineers is holding a conference at the University, Norman, April 7 and 8, on the subject metering crude oil and its products.

Past experimental work in the metering of crude oils and some of the more viscous products has made apparent the value of interchange of ideas on the subject, and the correlation of data gained by users of various equipment. With these thoughts in mind, the sub-committee of the fluid meters committee of the A.S.M.E., in meeting at Tulsa, January 3, expanded its range of activity to include a study of all types of fluid meters which might be used for the handling of petroleum or petroleum products, and at the same time proposed the forthcoming conference at Norman.

The program for the two-day session includes four papers; "The Various Types of Meters and the Principles Involved in the Metering of Crude Oil," "The Metering of Crude Oil Related to Pipe Line Flow," "The Metering of Petroleum and its Products in the Refinery," and, "Metering, as Related to the Production Branch of the Industry."

The following subjects will be presented for general discussion: The Principles of Metering Oil, A General Explanation of the Principles and Operation of Each Type of Meter which Might be Adapted to the Needs of the Industry, The Limitations of the Uses of Different Types of Meters, The Application of Meters to the Measurement of Flow, which the Engineers of the Industry Wish to Make, and the Problems Involved When Using Meters to Measure the Flow of Crude Oil.

The authors of the papers to be given will be engineers who have had practical experience with the particular problems each will discuss. Discussions will be general. Some of the latest types and designs of meters will be displayed at the conference by manufacturers. With the exception of university students who will be admitted to the conference without fee, registration will be $3.00, this assessment being made to defray expenses in connection with the conference.

New tanker order

Philadelphia.—Contracts for the condensers, condenser pumps and boiler feed pumps for The Atlantic Refining Company's 18,500-ton welded tanker now under construction at the Sun Shipyards, Chester, Pennsylvania, have been awarded to the Ingersoll-Rand Company. When the new vessel is commissioned next August, the Atlantic tanker fleet will contain the world's two largest welded ships, the "J. W. Van Dyke," a tanker of the same tonnage and welded construction having been commissioned in February.

Jubilee for South Texas oil men in San Antonio April 8

San Antonio.—Oil men will be guests of the South Texas Chamber of Commerce at the first South Texas Oil Men's Jubilee in San Antonio on April 8.

The occasion will have the dual purpose of honoring Oliver Winfield Killam of Laredo and of bringing together numerous new developers now operating in South Texas with those who preceded them in the area. Killam pioneered development of oil fields in South Texas and was one of the organizers of the South Texas Chamber of Commerce, serving as one of its first officers when he held position as first vice-president.

A feature of the jubilee will be a banquet in the ballroom of the Plaza hotel. Arrangements for the celebration are under the direction of Al Buchanan, chairman, and R. F. School field, E. B. Rubsamen, Jr., F. M. Frasher, Paul Meaders, and E. H. Keator. Killam will talk at the banquet on "The Experiences of a South Texas Wildcatter." Max Starcke, Mayor of Seguin and president of the South Texas Chamber of Commerce, will preside.

Killam began initial drilling for commercial oil in Zapata County in 1920 and later established the Texpata Pipe Line Company, founded Mirando City, and built the Misko Refineries.

Illinois-Indiana meeting June 4

The Illinois-Indiana Petroleum Association will hold its sixth annual conference at Robinson June 4, Lee Mulvihill, executive secretary, announced last week. The annual meetings have been growing in importance among oil gatherings, the 1937 conference having attracted nation-wide attention with officials of many major and independent companies present.

West Virginia meeting

The West Virginia Oil & Gas Association will hold a regional convention at Clarksburg, West Virginia, March 23, with representatives of Harrison, Upshur, Doddridge, Marion, Wetzel, Monongalia, Marshall, Braxton and Gilmer counties attending.

Tender Board will remain in Kilgore

Reports that the Federal Tender Board would be removed from Kilgore to Longview, Texas, were flatly denied March 16 by Secretary of the Interior Harold L. Ickes, commenting on a "campaign" of Longview interests to make their city the headquarters of the control work under the Connally Contraband Oil Act.

Recent inquiries by board officials as to the availability of additional space in Kilgore are understood to have been the basis for a rumor that the board would be moved.

Secretary Ickes explained, however, that with the recent increase in personnel the board found it necessary to secure additional office space, and that negotiations are under way for the lease of a building which will provide ample quarters in Kilgore.

Refined Market Stronger

Refinery runs kept in line with demand along with crude production control, no weakening on crude price follows Eastern States cut

THE oil industry's markets have continued to hold generally stable, from well to service station. Crude oil prices have not displayed any market unsteadiness in the wake of the March 7 reductions of Pennsylvania grade postings, although some anxiety has arisen over the existing price structures in other districts, including the Mid-Continent.

Weakness in the gasoline market lately has been confined primarily to retail outlets in various districts of the country. The prices at the refineries, in contrast, have been growing somewhat stronger lately.

Oklahoma Gasoline Up

In Oklahoma, for instance, the minimum price for low octane gasoline at the refineries last week was 4⅛ cents a gallon, or ⅛ cent higher than in the previous week; and some of the higher octane grades also were marked up ⅛ cent a gallon by some sellers.

In East Texas, too, the gasoline tank car market has improved, and the usual 60-62, 400 end point gasoline of the area was priced commonly at 4½ cents a gallon.

Kerosene and Fuel

The kerosene market currently is steady, as it apparently is beginning to feel the influence of the approach of spring agricultural activities.

The markets for light fuel oils continue comparatively weak, and prices have eased off further in some instances, as demand has continued relatively light, while inventories are heavy.

The heavier burning oils, used in industrial operations, also have continued in comparatively light demand, because of further lagging general business. But the prices of those oils have remained mostly unchanged.

Crude Control Strict

The curde oil market's continuing steadiness undoubtedly is based largely on the exceptionally strict control of production that remains in effect. Allowables for March in most of the larger producing states are in close conformity with the Bureau of Mines estimates of market demand, and actual production is similarly conforming closely with requirements. This success in balancing production with demand has prevailed most of this year, as evidenced by practically stationary levels of crude oil storage.

Likely to Continue

Thought is being given already to the allowables for April, and it is indicated that the leading producing states will continue the strict control that has been prevailing. The Texas Railroad Commission indicated, for instance, on the eve of the statewide proration hearing March 19, that it probably would extend the Sunday shut-downs of the fields of that state through April. The Texas fields have been closed every Sunday since the middle of January. A member of the Texas commission pointed out last week, nevertheless, that the United States stocks of crude and refined oils on hand April 1 will be about 15,000,000 barrels larger than desirable.

Statistics About Same

The statistics of the industry have continued largely unchanged from recent previous weeks, being partially satisfactory and partially unfavorable.

Of satisfactory nature have been recent figures on refinery operations as well as on production.

United States crude oil production of 3,382,100 barrels daily in the week ended March 12 was only about 10,000 barrels a day, or 3/10 of 1 percent higher than in the comparable week last year. Yet petroleum demand has continued to hold somewhat above last year's levels.

Crude Runs to Stills

Crude oil runs to refinery stills averaged 3,100,000 barrels daily in the week ended March 12, which was 3.9 percent more than in the corresponding week last year. That gain was, however, about in line with the present improvement over a year ago in petroleum demand.

Crude oil storage continues, meanwhile, a fairly satisfactory item, the stocks being only about 6 percent larger than at this time last year.

Gasoline Storage

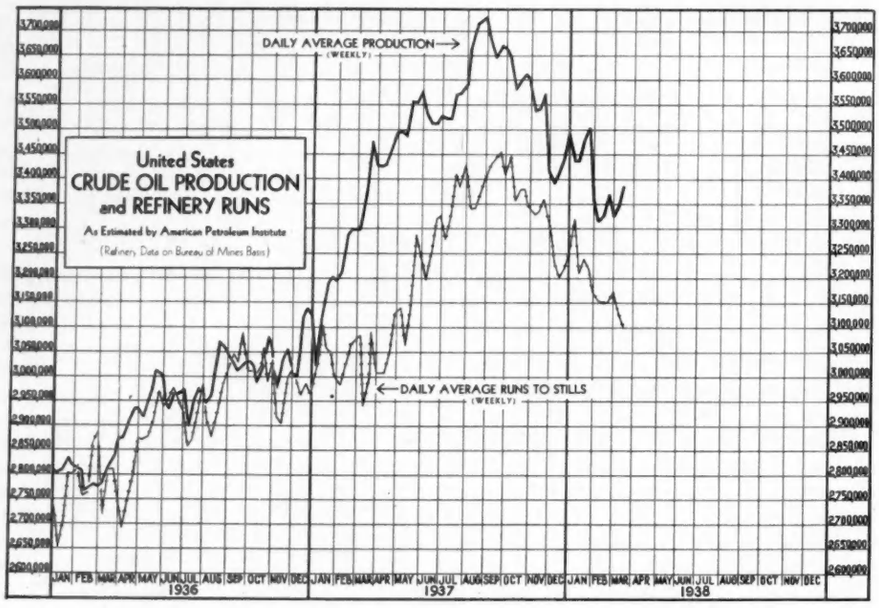
Gasoline storage, far larger than desirable, continues the most important

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August 29	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 5	3,316,450	3,155,000	304,494,000	86,484,000	118,619,000
February 12	3,324,500	3,150,000	304,915,000	87,813,000	119,293,000
February 19	3,369,250	3,150,000	305,219,000	89,774,000	119,948,000
February 26	3,322,800	3,170,000	305,167,000	90,719,000	120,958,000
March 5	3,339,700	3,130,000	304,527,000	92,151,000	122,471,000
March 12, 1938	3,382,100	3,100,000	.....	*93,084,000	122,818,000
March 13, 1937	3,372,850	2,985,000	†289,611,000	81,236,000	98,964,000
Change in past year	+0.3%	+3.9%	+5.2%	+14.6%	+24.1%

* All time peak. † Stocks, March 6, 1937.



unfavorable factor in the oil industry's situation. The gasoline stocks have continued to reach new all-time record levels each week. In the week ended March 12 the storage was increased approximately 1,000,000 barrels, as the new peak of 93,084,000 barrels was reached.

However, the increase was a little smaller than that in the comparable week last year. And it is to be expected that the gasoline stocks will begin to decline within the next few weeks, through benefit of the usual seasonal increase in demand.

At the 93,084,000 barrel level, the gasoline stocks were 14.6 percent larger than one year previously, although gasoline demand lately has been running barely above the levels of last year.

Fuel oil stocks now are also far out of line with market requirements. On March 12 they totaled 122,818,000 barrels, and exceeded by 24.1 percent the supplies held one year previously. Yet fuel oil demand lately has been disappointing, having failed to maintain the large year-to-year improvement that was shown some months ago.

Natural gasoline, grade 26-70, was priced generally in the Mid-Continent markets, f.o.b. refineries, at 2½ cents a gallon, and sales were reported at that same price f.o.b. Breckenridge, Texas.

Refinery Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below 4⅛ to 4¼ cents a gallon; 63 to 69 octane, 4⅜ to 4½ cents; 67 to 69 octane, 4⅝ to 4¾ cents; and 70 to 72 octane, 5 to 5⅛ cents.

Corresponding prices in the Chicago market were as follows: 4 to 4⅛ cents, 4¼ to 4½ cents, 4⅝ to 4¾ cents, and 4⅝ to 5 cents.

In East Texas the most common gasoline, 60-62 400 end-point, was priced generally around 4½ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4⅜ cents a gallon for the 41-43 water white grade, and from 4¼ to 4½ cents for the 43-44 water white grade. Corresponding prices in the Chicago market were 4⅛ to 4¼ cents and 4¼ to 4⅜ cents.

Fuel Oils Steady

Fuel oil prices were mostly unchanged. In the Chicago market oil was priced from 4 to 4¼ cents a gallon. The No. 1 white oil was priced from 3⅞ to 4⅛ cents, and No. 1 straw from 3¾ to 4 cents. No. 2 straw was 3¾ to 3⅞ cents and No. 2 dark from 3½ to 3¾ cents. No. 3 oil was 3½ to 3¾ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 95 cents to $1.10 to industrial buyers. No. 5 oils were 80 to 85 cents for domestic and 75 to 85 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 52½ to 60 cents a barrel.

CRUDE OIL PRICES

Postings for Pennsylvania grade crudes were reduced 15 to 17 cents a barrel, effective March 7.

All other prices in the United States remained unchanged, as shown in these columns March 7, 1938, pages 72 and 73.

The complete tables of prices are published only in the first issue of each month. The new Pennsylvania grade prices are as follows:

Bradford-Alleghany	$2.05
National Transit Lines	1.98
Southwest Penna. Pipe Line	1.71
Eureka Pipe Line, W. Va.	1.65
Buckeye Line, Macksburg, Ohio	1.55

Anadarko.—Sealed bids for oil and gas leases on 186 tracts of restricted allotted Indian lands will be opened at the Kiowa Indian agency here March 24. The announcement, issued by W. B. McCown, superintendent, revealed tracts in 5 counties will be offered, a total of 22,307.31 acres. Counties included are Tillman, Comanche, Grady, Caddo and Kiowa.

Summary of Wells Completed in the United States Week Ending March 19, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	....	....	....	....	.....	....	1
Arkansas	2	2	....	....	1,050	46	13
California	19	18	....	1	20,449	241	257
Colorado	....	....	....	....	.....	3	3
Florida	....	....	....	....	.....	....	.....
Illinois	4	1	....	3	147	153	11
Indiana	16	3	6	7	34	30	33
Kansas	27	19	1	7	28,018	432	453
Kentucky	13	8	1	4	175	155	48
Louisiana	17	11	1	5	6,402	247	145
Michigan	8	1	....	7	526	176	178
Mississippi	....	....	....	....	.....	5	5
Montana	1	1	....	....	30	8	16
Nebraska	....	....	....	....	.....	....	.....
New Mexico	11	9	1	1	5,175	112	145
New York	1	....	1	....	.....	15	3
Ohio	18	5	9	4	289	227	385
Oklahoma	37	19	3	15	2,127	474	625
Pennsylvania	3	....	2	1	.....	47	31
Tennessee	1	1	....	....	240	1	.....
Texas	224	173	7	44	277,674	2,826	2,921
Utah	....	....	....	....	.....	....	.....
West Virginia	19	4	13	2	28	207	202
Wyoming	1	....	1	....	.....	17	20
Total this week	422	275	46	101	342,364	5,422	5,495
Total last week	431	314	32	85	409,128	....	.....
Total this year	5,422	3,650	519	1,253	4,497,803	....	.....

Comparison of Permits Granted for New Wells

STATE	Week Ending Mar 19	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	4	12	52	20	240
California	29	83	284	283	1,584
Louisiana	16	50	282	177	1,227
Kansas	33	81	377	475	2,663
Michigan	27	52	142	192	958
Oklahoma	42	97	449	540	2,711
Texas	310	843	3,051	3,760	17,238
Total	461	1,218	4,637	5,447	26,621

Output Rises Sharply

California far out of line and Texas' mid-month gain sends United States production above bureau's recommendation.

DURING the past week United States crude oil production showed an increase of 60,000 barrels in the daily output. The total production the past week was 3,404,745 barrels daily, or 13,145 barrels a day above the Bureau of Mines estimated demand.

The increase during the past week could be contributed to higher production in Texas and California, which greatly offset small declines in Oklahoma, Louisiana and Kansas.

Texas averaged 1,286,800 barrels daily, which was 25,900 barrels more than in the previous week, 58,100 barrels less than the Bureau of Mines estimate and 206,373 barrels less than the state allowable.

California increased 39,900 barrels, the average production having been 760,100 barrels a day. That was 65,500 barrels a day more than the Bureau of Mines recommendation and the recommendation of the Central Committee of California Oil Producers.

Oklahoma output was down 6780 to 519,295 barrels daily, which was 28,405 barrels less than the federal allocation and 44,295 barrels more than the allowable prescribed by the state.

Louisiana showed a drop of 1125 barrels, the average output having been 255,375 barrels a day. That was 15,975 barrels more than the Bureau of Mines estimate and 11,424 barrels more than the state allowable.

Kansas also slightly decreased production to 172,050 barrels daily, which was 1050 barrels less than in the previous week, 4650 less than the Bureau of Mines estimated demand, but remained above the state allowable by 2522 barrels.

Natural gasoline up in January

Washington, D.C. — Production of natural gasoline in January failed to follow the downward trend of crude oil production, showing an increase from 180,810,000 gallons in December to 182,112,000 gallons, it was reported March 14 by the Bureau of Mines. The month's production was nearly 25,400,000 gallons above the output of 156,744,000 gallons of January, 1937.

Daily average production for the month was 5,875,000 gallons, against 5,833,000 gallons in December and 5,056,000 gallons in January of last year, the bureau announced. The most notable gain in output was in California, most of the other states excepting Arkansas registering declines.

Blending at refineries declined materially in January, with the result that stocks increased 8,106,000 gallons, compared with a decline of about twice as much in December, it was stated. Stocks at refineries increased from 106,428,000 gallons to 107,478,000 gallons during the month and those at plants and terminals from 93,408,000 gallons to 100,464,000 gallons.

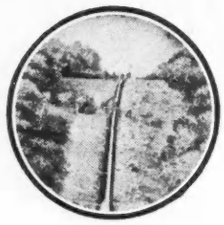
United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Mar.)	State Allowable in March	BARRELS DAILY FOR WEEK ENDED March 19	March 12
TEXAS—				
Texas Panhandle	.....	.....	64,700	66,800
North Texas	.....	.....	66,100	64,500
West Central Texas	.....	.....	26,700	26,900
West Texas	.....	.....	184,200	180,900
East Central Texas	.....	.....	96,300	90,200
East Texas Field	.....	.....	428,100	427,100
South Texas	.....	.....	225,400	216,300
Texas Gulf Coast	.....	.....	195,300	188,200
Total Texas	1,344,900	1,493,173	1,286,800	1,260,900
CALIFORNIA—				
Long Beach	.....	.....	58,500	57,300
Santa Fe Springs	.....	.....	40,300	38,100
Huntington Beach	.....	.....	36,300	35,400
Dominguez	.....	.....	29,500	28,600
Inglewood	.....	.....	17,400	16,200
Ventura Avenue	.....	.....	39,500	25,800
Seal Beach	.....	.....	9,475	8,500
Midway-Sunset	.....	.....	72,300	74,500
Elwood	.....	.....	7,450	7,400
Kettleman Hills	.....	.....	84,200	80,600
Mountain View	.....	.....	12,900	12,400
Playa del Rey	.....	.....	6,950	6,900
Wilmington	.....	.....	118,975	96,000
Others	.....	.....	226,350	232,500
Total California	694,600	*694,600	760,100	720,200
OKLAHOMA—				
Oklahoma City	.....	.....	125,100	129,150
Seminole Area	.....	.....	94,580	101,975
Crescent	.....	.....	7,500	7,450
Lucien	.....	.....	12,750	13,000
Fitts	.....	.....	60,825	59,100
Edmond	.....	.....	6,725	6,800
Moore	.....	.....	7,050	7,125
Others	.....	.....	204,495	201,475
Total Oklahoma	547,700	475,000	519,295	526,075
LOUISIANA—				
North Louisiana	.....	.....	78,175	78,800
South Louisiana	.....	.....	177,200	177,600
Total Louisiana	239,400	244,130	255,375	256,400
KANSAS—				
Ritz-Canton	.....	.....	6,500	6,475
Chase	.....	.....	5,125	5,725
Hollow-Nikkel	.....	.....	3,750	3,675
Sedgwick	.....	.....	3,925	3,900
Burrton-Haven	.....	.....	11,475	11,250
Lorraine	.....	.....	2,775	2,425
Russell County	.....	.....	29,150	28,125
Silica—West	.....	.....	14,850	14,700
Silica—South	.....	.....	2,475	2,450
Others	.....	.....	92,035	94,375
Total Kansas	176,700	169,528	172,050	173,100
NEW MEXICO	105,100	101,100	105,200	105,050
MICHIGAN	51,600	.....	52,700	51,300
ARKANSAS	38,200	.....	49,125	48,925
MOUNTAIN STATES—				
Wyoming	46,400	.....	47,900	47,400
Montana	13,300	.....	12,450	12,200
Colorado	4,500	.....	3,850	4,350
Total Rocky Mountain States	64,200	.....	64,100	63,950
EASTERN STATES—				
Pennsylvania Grade	.....	.....	81,000	78,900
Southern Illinois (New Pools)	.....	.....	26,500	26,850
Illinois-Indiana (Old Pools)	.....	.....	12,100	11,900
Others, Eastern	.....	.....	20,400	20,950
Total Eastern States	129,200	.....	140,000	138,600
Total United States	3,391,600	.....	3,404,745	3,344,500

* Recommendation of Central Committee of California Oil Producers.

PIPE LINE NEWS



New association formed to study cathodic protection

As a result of increasing interest in the use of electrical drainage for preventing corrosion of oil and gas lines, as well as other buried metallic structures, an association was formed in Houston on March 9 to promote proper methods of installing this protection. The association will be known as the Mid-Continent Cathodic Protection Association.

The association is a voluntary one composed of any and all companies or individuals interested in the cathodic protection of metallic structures. There are no membership fees and attendance at the meetings and participation in the activities of the organization is urged for those interested in this subject.

The main purpose of the organization is to determine the most satisfactory manner of notifying interested parties within the drainage radius of each cathodic protection unit.

The affairs of the organization are handled by a committee of five composed of L. F. Scherer, The Texas Company, Houston, chairman; Walter F. Rogers, Gulf Oil Corporation, Houston, secretary; E. R. Cunningham, United Gas Pipe Line Company; J. C. Stirling, Stanolind Pipe Line Company; O. C. Mudd, Shell Pipe Line Corporation.

A meeting is planned to be held some time in June, 1938. Any person not present at the first meeting desiring to obtain copies of the minutes of the meeting may obtain them by writing the secretary.

Discuss $25,000,000 pipe line project in Canada

Construction of pipe lines from Turner Valley, Alberta, to the Pacific Coast port of Vancouver, British Columbia, and to Fort William, head of the Great Lakes, projects that would cost $25,000,000, was discussed as measures of British Empire defense in Canadian oil circles last week. W. S. Campbell, president of the Petroleum Producers' Association, suggested guarantee of bonds for the undertaking by the Dominion government, pointing out that Britain was greatly interested in securing an adequate supply of oil within the Empire which would be readily available during war-time.

The proposed line to Vancouver would make Alberta oil available on the Pacific Coast 12 months of the year, while the line to Fort William would make movement of oil to Eastern seaports possible during the eight-month Great Lakes navigation period. Campbell said that unless Alberta producers get oil transported by rail to Fort William at 60 cents per barrel and to the coast at 50 cents a barrel, construction of one or both of the pipe lines would be inevitable. He pointed to wheat haulage to the coast at 25 cents a hundred pounds and maintained that oil could be hauled cheaper as the railroads would not have to furnish the cars.

The association president, who had spent several weeks in Ottawa confering with Dominion officials concerning Turner Valley's crude marketing problems, said the government should assist the oil industry in the same way it had assisted other industries.

Further encouragement to Alberta producers was given by William H. Funston, president of Firestone Tire & Rubber Company of Canada, Ltd., who, while in Calgary last week, said he was following oil development with deep interest. "When one considers that the consumption of oil in Canada is 60,000 barrels per day, and that half of this can be produced in Alberta, it means a big thing for the province," said Mr. Funston. "When you consider that there is 250,000 miles of pipe line in the United States, then the possibility of a pipe line from Turner Valley to the head of the Great Lakes is not a remote possibility."

Michigan pipe line getting final test

Following a test run, the 6-inch 33½-mile pipe line of Bay Pipe Line Company, connecting the prolific Buckeye field of Gladwin County, Michigan, to a 4000-barrel refinery under construction at the mouth of the Saginaw River is being back filled. The work is to be completed by April 15.

Meanwhile, work at the refinery, being constructed by the affiliated Bay Refinery Company, was being rushed in an effort to start operations March 25. Before that date, an additional 10,000 barrels of crude will be run to tanks at the refinery, bringing the total on hand to 15,000 barrels. Both companies are controlled by independent producing interests in the Buckeye fields, with the pumping station for the line being located in the field.

Adjacent to the refinery, a loading dock to accommodate large lake tankers is under construction, permission having been given recently by the War Department. The dock will be used to convey refined and crude products to tankers for transportation to other lake ports and it is to be completed before the end of the month.

New Santa Maria pipe line proposed

With Union Oil Company controlling the only pipe line outlet for oil being produced in the Santa Maria Valley oil field, independent interests are taking a more active interest in the possibility of securing a definite means of getting their crude to market.

A few weeks ago Union Oil Company announced that it would run its own crude, meaning that it would no longer permit independent interests to use its outlet. Since that announcement, E. L. Cragen acquired two acres three miles south of Santa Maria and is seeking contracts for 2000 barrels a day.

Cragen's entry into the Santa Maria Valley field is the third independent project started there. One unit is near the junction of Betteravia and Point Sal roads in the lower valley where site is cleared, and the other is on the M. Olivera ranch at the junction of the Pacific Coast and Santa Maria Valley railroads, near Gates Station.

Want permission to lay Michigan gas line

The Michigan Public Utilities Commission on March 22 will conduct a hearing on a petition of J. A. Pierce, of Clare, and Paul F. Hughes, of Mt. Pleasant, to construct a 4-inch pipeline from Pierce's Murphy 1 gas well in Wise Township, Isabella County, to the transmission line of Gas Corporation of Michigan near Clare. Permission has already been granted to lay a 2-inch line, but authorization for the larger line is sought on the ground that the small one is not adequate. The gas will supplement supplies of the Gas Corporation which early this winter was faced with a shortage that threatened a gas famine in Mt. Pleasant and other communities supplied by the company.

Atlas delivers Schuler oil to Lion Refining

Shreveport.—Atlas Pipeline Company, in which Lion Oil Refining Company recently took an option on a majority of the stock, during February delivered 82,200 barrels of Schuler, Arkansas, crude to the Shreveport refinery of Spartan Refining Company, a subsidiary of Atlas. Lion and Root Petroleum Company are the only buyers at present of Schuler crude.

East Texas Refining Company has completed an 8-inch line from its Rodessa, Louisiana, casinghead plant to its leases in Miller County, Arkansas.

Shreveport.—Standard Pipe Line Company has let contract for a 4-inch welded line from the Cotton Valley field, Webster Parish, to its Weller station, a distance of approximately 12 miles, to Latex Construction Company. Work of laying the line is ready to start. The line will connect at Weller, which is near Minden, with Standard's trunk line to Baton Rouge.

Washington.—The Interstate Commerce Commission last week placed a tentative value of $59,500,000 on the property of Humble Pipe Line Company owned and used for common carrier purposes. The valuation is as of December 31, 1934.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

41 Tests Drilling

Alberta looks forward to busier year; Saskatchewan is scheduled to prospect seven areas this summer

ADVENT of the spring season finds 31 Turner Valley tests drilling, with an additional 10 tests active on wildcat structures, forecasting an even greater development program in Canada than that of the past year. There are 12 Turner Valley tests in preliminary stages, the actual drilling starts to be determined by weather conditions but certain to be under way by June 1. At least that many more will start early in the summer. A survey of wildcat structures reveals operations about to resume at many tests that had been idle during the winter because of difficulty in getting supplies to locations, while several companies are arranging for new tests to be started early in the season.

In the neighboring province of Saskatchewan, E. Swain, supervisor of mines in the department of natural resources, reports that exploration for oil and gas will be carried on in seven areas this summer: Lloydminster, Kamsack, Simpson, Vera, Maple Creek, Riverhurst and Battleford. Favorable reports have been made by geologists concerning each of the structures, he said.

Encouraged to South

Encouragement to plans for southerly development of the West Flank of Turner Valley is given in the log of National Petroleum Corporation, Ltd.'s 2, Legal Subdivision 14, Section 9, Township 18, 2-w5, near Highwood River, which reveals that the south end slopes very gradually, if at all. The log of the National Petroleum Corporation's well and that of Prairie Royalties, Ltd., a mile to the north and almost a half mile to the west, show that the former well encountered some markers at shallower depths and others at somewhat deeper levels. The Prairie Royalties well is one of the field's larger producers, having a potential daily yield of 1275 barrels. Respective log markers of the National Petroleum and Prairie Royalties wells below the Benton contact, with the National Petroleum depth given first, are: Cardium sandstone, 4300 feet, 4410 feet; Jumping Pound, 4950 feet, 4690 feet; grit bed, 5110 feet, 5250 feet; Blairmore contact, 5290 feet, 5310 feet; Home sands, 6450 feet, 6300 feet. National Petroleums was drilling at 6550 feet as the week closed.

Four Turner Valley tests were drilling in the Madison limestone as the week closed, with completion of all of them expected by the end of the month or during the first week of April. Attracting most importance was Royalite Oil Company's 29, Legal Subdivision 7, Section 27, Township 20, 3-w5, in the extreme north end of the field. It was drilling at 6867 feet, including 592 feet of limestone.

To Resume

Roy Widney, Turner Valley driller, has been placed in charge of Ranchmen's Gas & Oil Company, Ltd.'s wildcat on the High River-Aldersyde structure, which is being completed by Anglo-Canadian Development & Holding Company, Ltd. This test, which has recently been held up with a fishing job at 7230 feet, encountered a showing of high grade crude at 6263 feet. It is now in the Dalhousie formation, with the Madison lime contact expected in another 125 feet. Operations were to resume this week.

Green Valley Petroleum, Ltd.'s Banner 1, wildcat on Legal Subdivision 6, Section 34, Township 17, 3-w5, which a week ago promised to prove the Highwood-Sinclair structure as an oil field, continued to give up two barrels of crude a day as the bailer was run in the morning and the evening. Fishing tools arrived at the well site late in the week, and operators expected to clear the hole and run 6-inch casing to the Madison limestone. The test is 100 feet in the crystalline marker in the Madison and is not believed to have yet encountered the porous horizon found so productive in Turner Valley to the northeast. During the week, a test of the crude was made which revealed it to be 35 degrees Baume, suitable for cracking and showing more than 80 percent high grade gasoline.

To Deepen on Taber

Previously announced plans to abandon Plains Petroleum Corporation, Ltd.'s 3, on the Taber structure, near the International boundary, were changed last week and officials now propose to deepen with a diamond rig for a thorough test of the limestone. Oil shows were obtained at the lime contact at 3400 feet, but water was encountered when the well was carried a few feet deeper. Casing will be lowered to the limestone and drilling continued to approximately 3700 feet. Drilling is to start late this month at the company's Nos. 4 and 5, located on Legal Subdivision 15, Section 25, Township 9, 17-w4 and on Legal Subdivision 16, Section 2, Township 9, 17-w4, respectively.

On the Steveville structure, Anaconda Oil Company, Ltd., will resume operations at its wildcat early in April, announced A. J. Scott, managing director of the company. The test has been idle during the winter at 1207 feet.

Plan to curb Turner Valley gas waste

Declaring that the Alberta government is doing everything in its power to extend the life of the Turner Valley oil field, Hon. N. E. Tanner, Provincial minister of lands and mines, last week announced that an agreement had been reached between Provincial and Dominion officials to make possible legislation curbing gas waste by naphtha producers in the field.

"We have for some time been negotiating with the Dominion government with the idea of amending the transfer agreement so that this government will have the power to put into effect a conservation program," Tanner said. "I am pleased to state that during the last few days we have finally agreed on an amendment which will make it possible for us to legislate and make regulations to stop this enormous wastage which has been going on.

"There is no doubt but what this will extend the life of the Turner Valley oil field and conserve the pressure for the crude oil area. The government is determined to do everything in its power to see that any such program will be carried on in such a way that will be most beneficial to the industry and fair and equitable to all producers. If this program necessitates the closing in of the naphtha wells on the East Flank, it will be done in a way that will protect the interests of the naphtha producers.

"It is in our interest to continue

oil development to the point where we have proven a potential great enough to guarantee a supply to the available markets and to demand certain concessions," Tanner added. Protection of markets, better freight rates and establishment of the Alberta field as a source of supply to the British Empire in time of need were necessary, he said.

Reliance on foreign fuel dangerous for Britain

London (UTPS).—The dangers of the exclusive use of oil fuel for the British navy was pointed out this week to members of the services, members of parliament and industrialists by Admiral Sir Barry Domville.

"The whole policy," he said, "is a gamble, with the dice loaded against us. Although Britain exercises financial control over 20 percent of the world's oil supply, that does not ensure possession in time of war. American neutrality legislation, Russian influence in Iran and Arab hostility in Iraq, which had caused 40 fractures in the 700-mile pipe line to Haifa in the last year, might well fatally interrupt vital supplies without which the navy, army and air force would be powerless."

Admiral Wilmot Nicholson spoke of the difficulties of war-time transport of oil fuel, the scarcity of merchant ships and the impossibility of providing adequate convoys with a greatly diminished navy. He, too, advocated the adoption of dual firing in warships.

But then, of course, the occasion was a lunch given by Theodore Instone, a director of colliery companies.

Tasman says Budafapuszta discovery is interesting

Cevat E. Tasman, whom Mid-Continent and Gulf Coast engineers and geologists may remember as Djevad Eyoub, is taking advantage of the comparative quiet in Turkish wildcatting activities, which he directs, and has been touring oil fields of continental Europe. A recent letter to THE OIL WEEKLY from him contains in part the following interesting comments:

"Taking advantage of the comparative quiet in our activities in Turkey, I am making a tour of Europe's new oil fields and some drilling equipment firms.

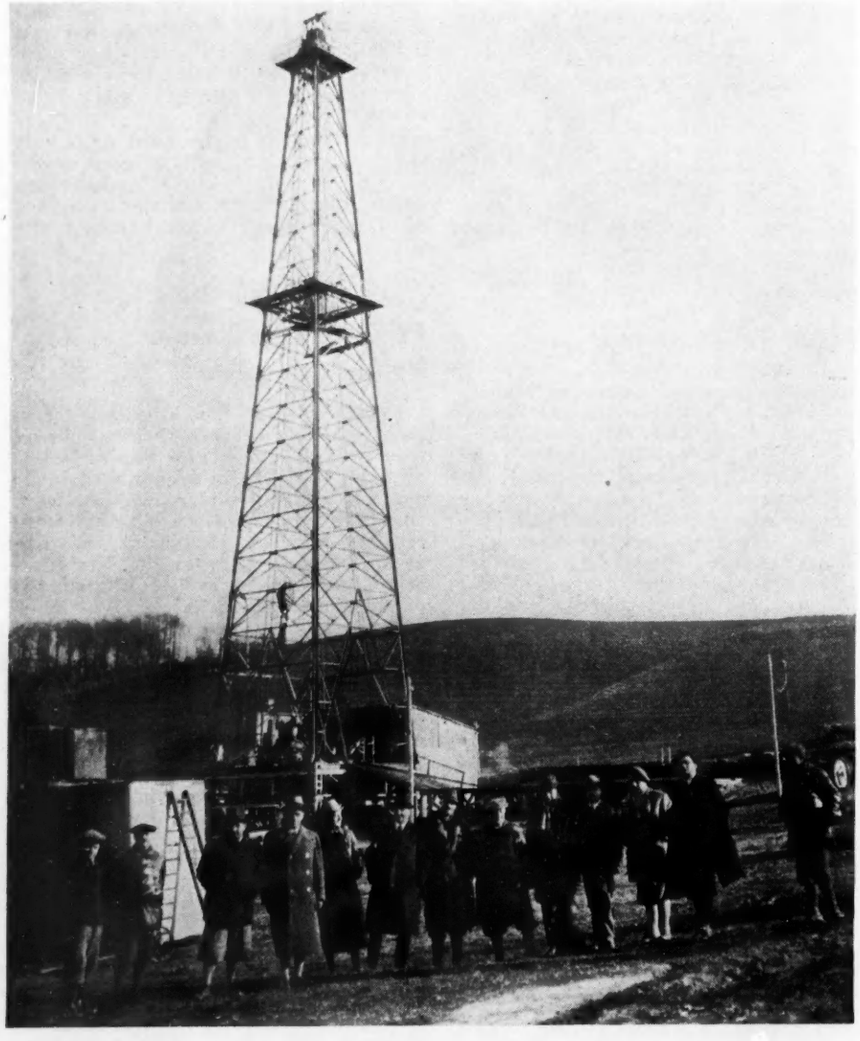
"The Hungarian discovery (at Budafapuszta) by European Gas & Electric Company is indeed very interesting. It is close to the Jugoslavian border. The new well has a settled production of 200 barrels a day.

"Two weeks before I arrived in Vienna (he wrote from Berlin) the Zistersdorf field in Austria completed its best well, Zistersdorf 11. It came in as a 1500-barrel well with a casing pressure of 1400 pounds and tubing pressure of 1000 pounds. Through a quarter-inch choke it has settled to a production of 450 barrels daily and is by far the best well yet completed in the field.

"I have added to my geological staff D. D. Sparks of Houston and to the drilling crew Mr. Rose of California. We are increasing our activity after June and we may try one European crew.

"It has been almost five years since I left Texas. For some life may begin at forty, but for me it has been the beginning of more intense work."

Tasman was forced to drop his original surname of Eyoub by a Turkish decree stipulating that all permanent residents in the country not having typically Turkish names must adopt such names.



Budafapuzsta 2, discovery well of the new field of that name in Hungary, had maintained a rate of 370 barrels per day up to February 23, according to information received from the field subsequent to Eyoub's observation. European Gas & Electric Company was reported drilling below 4200 feet on No. 3 and its completion was expected any day. Locations have been made for Nos. 4 and 5. Budafapuzsta oil is 42 API gravity. The gentlemen in the foreground of the picture are company and government officials.

Mexico may lower tariffs on oil equipment imports

Higher tariffs on a variety of Mexican imports, most of which come from the United States has affected the oil industry but little as yet. The new duties apply mostly to heavy machinery, wire and tools. The industry is doing little, if any, importing at present.

It is expected in informed circles that the government will drop the high tariffs as soon as it can. As the law now stands, the very high phase of these duties is in effect until April 30. Starting May 1, they are to be reduced, but to levels that are much higher than the former imposts.

Activities of the oil industry are limited to merely routine work to protect wells and other property, in accord with agreements made prior to the start of the general trouble. There is no expansion, no new work.

Czechoslovakian output slightly down in January

Production of crude oil in Czechoslovakia during January amounted to 1617 metric tons, a decline of 5.7 percent when compared with that of December, but an increase of 18.9 percent over the 1360 metric tons produced in January, 1937, according to Edward B. Lawson of Prague.

Completion at Tarra

Colon Development Company, Limited, reported completion of T-83 in Tarra field, Venezuela, for an initial production estimated at 380 barrels per day. (Tarra field is sometimes referred to as Las Cruces.)

[*Continued from page 15*]

are uncertain. The papers were summed up in the abstract as:

"Heaving shale is usually found where there is a change in facies from shale to sand. It does not behave everywhere in the same manner because there are several kinds of heaving shale, each having its peculiar characteristics. The most treacherous of all heaving shale formations is the Jackson; however, in many places the Vicksburg heaves due to numerous lenses. For such formations no entirely successful method of combating heaving shale has been devised. Heaving shale is more likely to occur on structure than off structure. Maps can be prepared that are helpful in evaluating prospects in heaving shale trends."

John L. Rich, University of Cincinnati, cited the studies of Taber which pointed out why the mechanics of graben faulting caused the crust on the sides of the graben to tilt backward and added, "the same principle applies also to large normal faults. It may explain features like the Granite Ridge of Kansas." His paper was titled "Graben Faulting and Associated Phenomena."

Gas Variations

Paul H. Price, State Geologist of West Virginia and A. J. W. Headlee, Morgantown, West Virginia, called attention to the fact that composition of natural gas in the Appalachian area shows it to have certain definite regional variations. They gave this conclusion: "these regional variations in composition of natural gas offer criteria for prospecting for gas and oil and indicate relative areal position of gas and oil in a given reservoir." This paper was titled "Regional Variations in Composition of Natural Gas in the Appalachian Province."

"Behavior of Fluids in Oil Reservoirs," was the subject of a paper by T. V. Moore, Humble Oil & Refining Company, Houston.

Use of water as a reservoir energy was offered as a coming method of production by Frank G. Miller and H. C. Miller, United States Bureau of Mines, San Francisco. Their suggestion was: "No longer is the encroachment of water into the oil and gas filled part of the reservoir considered as an evil to be combated by devious methods but rather as a natural consequence incident to the withdrawal of oil and gas from the wells, that may be used advantageously in lengthening the flowing life of wells and increasing the economic recovery of oil and gas."

John S. Ivey, Union Producing Company, Houston, gave a brief discussion from his paper, "Rodessa Oil Field."

In "Comparisons of the Gulf Coast and Appalachian Geosynclines," W. Armstrong Price, Corpus Christi, Texas, had this summary: "Back of the whole process of the filling of the great interior ocean of North America may have been an original density excess under the ocean basin, the Gulf being the last remnant to be filled. Such a history, however, would not conflict with the mechanism now seen as active in the formation of the Gulf Coast geosyncline; namely, subsistence of areas of sedimentation under load balanced by uplift in the near-shore plains."

A history of the Darrow Salt Dome, Ascension Parish, Louisiana, was given by Carroll E. Cook, Humble Oil & Refining Company, New Orleans.

J. C. Karcher, Geophysical Service, Inc., Dallas, gave a review of the relations between physics and geology.

Oil field discoveries of the year were outlined by Alexander Deussen, Houston.

Philip B. King, United States Geological Survey, Washington, in "Paleogeography and Correlation of West Texas Permian" came to the conclusion that the Capitan is approximately the equivalent of the Whitehorse, after a study of beds exposed on west with those exposed on the east of the Permian basin. Relation of the beds beneath the Capitan and Whitehorse have not been determined since there is conflicting fossil evidence and the beds have not been penetrated in certain areas.

The geology of the Goldsmith pool was presented in a paper by Addison Young, Max David and E. A. Wahlstrom, Landreth Production Company, Fort Worth.

The geologic structure of part of petroleum reserve No. 7, Washington County, Utah, was outlined by C. E. Dobbin, United States Geological Survey, Denver. Discovery of oil in the Virgin field to the east, plus an anticlinal structure led to the drilling of six wells in the area but oil and gas in commercial quantities were not found.

In his paper, "Possible Nature of Some Limestone Reservoirs of the South Permian Basin," Hal P. Bybee, Bureau of Economic Geology, Austin, said: "It is possible that the reservoirs in the area contain many spaces filled with oil, rather than normal porosity induced by the change from limestone to dolomite or the natural voids of regular sedimentation."

Summaries from recent detailed work in the faulted area west of the Llano uplift were offered by F. B. Plummer, University of Texas, and R. C. Moore, University of Kansas.

Characteristics of the Travis Peak formation were offered by Robert H. Cuyler, University of Texas, whose paper was titled, "Travis Peak Formation in Central Texas." This basal series of sediments of Cretaceous age has three members in the area, Hensell, Cow Creek and Sycamore, whose characteristics were thus described: The varied nature of sediments in different members causes members to change rapidly in thickness in different localities. In a distance of 60 miles along the dip of the formation the Travis Peak varies from less than 50 to approximately 600 feet, the thickening taking place down dip. The Travis Peak-Glen Rose contact varies in nature, being marked by conglomerates in some areas and by coarse sandstones in others. Some zones in the Travis Peak are very fossiliferous; the faunal assemblages have a typical Aptian aspect."

The area north of the Wichita Mountains in Oklahoma was classed as favorable for oil prospecting by Clark Millison, Tulsa, who pointed out that, "the presence of high-gravity oil and gas at shallow depths, adequate reservoir beds and sufficient structure for traps suggest this area as a promising province for petroleum reserves."

The history and geology of the Wilmington field, California, was the subject of E. J. Bartosh, Bankline Oil Company, Los Angeles.

In his paper, "Structural Significance of the Cincinnati Arch," J. R. Lockett, Ohio Fuel Gas Company, Columbus, had this conclusion: "the structure of the Cincinnati arch has had very little influence on the accumulation of oil and gas. Minor folds which have been formed within the basin areas have controlled accumulation in all producing horizons except the Clinton and Trenton."

Kendall E. Born, assistant geologist, Tennessee Division of Geology, Nashville, discussed a thin sand of the lower Ordovician in middle Tennessee as correlating with the St. Peter sandstone of the Mississippi valley region.

W. T. Nightingale, Mountain Fuel Supply Company, Rock Springs, Wyoming, offered the opinion that oil and gas found in the Wasatch formation, lower Oecene age in the Powder Wash field, northwest Colorado is indigeous to the non-marine Wasatch formation. He said accumulation is apparently controlled by an upfolded Tertiary dome. He discussed the field as an example of production from non-marine sediments.

The Monument field, New Mexico, was given historical and geological treatment by W. D. Anderson and James R. Day, Amerada Petroleum Corporation, Midland, Texas.

A discussion of salt dome terminology was offered by Ralph E. Taylor, Freeport Sulphur Company, New Orleans.

The question of proper designation for Yegua formation was discussed by H. B. Stenzel, Bureau of Economic Geology, Austin.

In giving the history of development of the Jackson gas field, Mississippi, Henry N. Toler, Mississippi State Oil and Gas Supervisor, Jackson, and Watson H. Monroe, United States Geological Survey, Washington, gave details of geological findings in the deep well drilled by the state of Mississippi.

D. J. Munroe, Sun Oil Company, Hattiesburg, Mississippi, gave two significant facts in regard to the Scanlan or Midway salt dome, Lamar County, Mississippi: "The definite establishment of a salt dome basin in central Mississippi and, through the finding of 152 feet of asphaltic sand, the proof of the former presence of source beds of sufficient extent to yield oil in large quantities."

"The Refugio Oil and Gas Field," was the subject of Phil F. Martyn, Houston Oil Company, Houston. It covered development and geological details.

Numerous other papers were read by title only.

OKLAHOMA FIELDS

Lincoln County wildcat finds Wilcox salty.

* * *

Southern Oklahoma drilling continues active.

Tulsa.—Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Strader 1, NWc 8-13n-3e, south of Warwick in Lincoln County, has been checking more than 125 feet higher than a dry hole to the north, but drilled into the first Wilcox sand and found it white, dry and salty. Corrected tops for the well showed the Viola lime was at 5092 feet with Simpson dolomite at 5124 feet. Cored from 5146 to 5161 feet, the recovery showed dolomite and heavy lime, with the bottom portion of dolomite with no show. Successive cores from 5162 to 5197 feet revealed lime, grey shale, greenish dolomite and the first Wilcox sand, topped at 5173 feet. It was to core farther in search of second Wilcox sand.

North of the North Earlsboro pool, Pottawatomie County, Mid-Continent Petroleum Corporation's McClellan 1, SWc NW 19-11n-5e, was shut down for orders at 4886 feet, and may be abandoned. It had top of the dolomite at 4859 feet and recovered a core showing heavy black oil at 4862 feet. Top of the first Wilcox sand was at 4881 feet. Seven-inch casing was set at 4829 feet.

Alma Oil Company's Smith 1, SEc NE 32-7n-5e, in the St. Louis pool of Potawatomie County, was running tubing and building tanks before acidizing for a test. At 4059 feet in Simpson dolomite, it had a hole full of fluid in 2 hours, most of which was oil. Latest estimated production is set at around 35 barrels of oil per hour.

Two more tests have started on the community block of the Ramsey pool, Payne County. Mid-Continent Petroleum Corporation et al's Ramsey 2, NW SW NW 18-18n-2e, was building rig as was Columbia 2, NE NW SW 18-18n-2e.

South of the pool, E. H. Moore's Boyd 1, 24-18n-1e, was drilling below 3390 feet. West of the pool, J. E. Crosbie's Fruin 1, SEc NW 13-18n-1e, was preparing to resume drilling at 900 feet after changing rig. Maradun Oil Company et al's Moore 1, (formerly Big Chief Drilling Company) SE SW NW 17-18n-1e, topped the Avant at 3220 feet; topped the Dewey at 3335 feet and was shut down to repair equipment at 3385 feet.

One mile north of the discovery well of the pool, Sun Oil Company et al's Lewis 1, SEc NE 12-18n-1e, was a location. It is the first try for production north of the pool.

Phillips Petroleum Company's Beeker 1, NE NW SW 8-5n-10e, southwest of Calvin in Hughes County, was making a much stronger show as a producer last week. Bailed to the plug, the well filled 1500 feet with oil in 8 hours and was not making any water. Testing was to be continued. Beeker 1 was started October 12, 1937, and shut down recently because of discouraging shows. Present production is thought to be from Cromwell sand. It topped the Wilcox sand at 5754 feet. Drilled to 6286 feet, it was later plugged back to 5760 feet.

Activity continues in the new area 11 miles east of Tulsa, where Burgess sand production was opened by Lamberton's Caldwell-Grayson 4, SEc NE 8-19n-14e. Pipe was being run after a saturated sandy lime was encountered at 1325 feet. Several other tests are underway in the shallow area, first discovered 20 years ago.

Another producer in the Traugh pool of Seminole County was W. B. Pine's Tiger 1, SWc SE 15-6n-6e. The well was reported to have flowed approximately 300 barrels of oil the first hour, producing from between 3398 and 3426 feet in Viola lime. The formation was topped at 3398 feet. Seven-inch casing was set at 3425 feet.

Atlantic Refining Company's Bowles 1, NE NW NW 22-6n-6e, apparently defined the west side of the pool when it swabbed only 76 barrels of oil and 1135 barrels of water in 24 hours from 3614 feet.

Oklahoma City Sector

A new wildcat for Noble County was started last week at Cromwell-Franklin Drilling Company and Tuesday Oil Company's Holcomb 1, C SW NW 34-20n-1w, east of the Lucien pool and south of the Perry gas pool.

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In the Langston pool of Logan County, Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Knight 2, NE SE SW 12-17n-1w, was preparing to shoot the sand after flowing 168 barrels of oil in 24 hours. Production was from Wilcox sand between 5035 and 5100 feet.

Ardmore District

Southern Oklahoma continued active but quiet. In the deep area of the Fox field, Carter County, Gulf Oil Corporation's Smith Estate 1, C SW SW 26-2s-3w, continued testing at 7920 feet. On last tests the well flowed 443 barrels of oil and 64 barrels of water through bottom-hole choke in 24 hours.

Gulf's Garrett 8, C NW SW 27-2s-3w, was drilling at 3160 feet in shale; Johnson 2, C SE NW 27-2s-3w, was spudding; McClure 2, C SE NE 28-2s-3w, was drilling below 3830 feet; and Carter Oil Company and Gulf's Lester 1, C NW NW 35-2s-3w, was drilling

OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARTER COUNTY—		
Shell Pet., I. Keck 21, ne se ne 5-43-3w	17	1170
CLEVELAND COUNTY—		
Harper Turner, Pollock 1, cw½ nw nw 13-9n-2w	*	7590
COAL COUNTY—		
Choctaw O&G, Myers 1, cw½ sw se (owpb)	38	4332
COTTON COUNTY—		
Jim Turner et al, Collins 1-A, sw ne ne 18-4s-10w	*	1305
OKMULGEE COUNTY—		
Texas Co., Jefferson 10, csw sw 22-15n-14e (owdd)	*	2608
John Rebold, Allen 1-A, ce½ nw nw 31-15n-14e	8	1709
B. H. Young, Tr., Brunner 3, cw½ nw se 5-15n-14e	80	817
Dixie Oil, J. Lowery 1-A, ne ne se 23-16n-14e (owdd)	*	2213
GARFIELD COUNTY—		
Champlin Refining, Kindt 1-C, nw sw ne 36-23n-4w	¶7	5150
GRANT COUNTY—		
Carter Oil et al, Barclay 1 c-55, ce½ se ne 17-25n-3w	*	5555
JEFFERSON COUNTY—		
Rips & Ungerman 4, Penniston 4, w½ w½ ne sw 16-7s-5w	¶2	730
LOGAN COUNTY—		
Stano & Amerada, Blunt "B" 1, cw½ w½ nw¼ 26-51n-3w	*	6495
Arrow Drlg., Dobson 1, nw nw nw 23-17n-1w	*	5385
OKFUSKEE COUNTY—		
Helmerich & Payne, Laskey 3, se nw sw 25-10n-10e (owdd)	*	4127
OKLAHOMA COUNTY—		
Hall & Briscoe, Miller 1, se sw nw nw 35-12n-3w	360	6408
OKMULGEE COUNTY—		
Jordon Bros., N. Smith 2-A, ne se se 17-13n-11e	*	3346
K & K Drilling Co., Korp 3, cne ne nw¼ 23-14n-12e	5	1723
OSAGE COUNTY—		
Barnsdall, Osage 21, cs½ n½ se¼ 5-20n-12e	10	1605
Fred Hight, Osage 9, se se nw nw 3-22n-9e	2	1040
R. Branstetter, Osage 4, ne se sw 23-22n-11e	4	1633
Carter-Norbla, Osage 1, nw nw nw 3-24n-6e	*	2839
Tide Water et al, Osage 3, sw nw sw 21-24n-9e	100	2270
Harland, Osage 33, cs½ nw nw 25-24n-11e (owdd)	6	1742
I.T.I.O., Osage 187, nw nw se 31-25n-10e	¶7½	2365
PAYNE COUNTY—		
Helmerich & Payne, Ritchie 1, c ne nw 34-18n-1e	*	5353

below 3340 feet. Carter Oil Company's Feagin 1, C NW SW 36-2s-3w, farthest southeast test in the field, was drilling below 1950 feet.

Oklahoma is making its bid for the deepest test in the world as Gulf Oil Corporation indicated it might carry Thomas 1, SW NW NW 14-4n-5w, to 15,000 feet. No definite announcement concerning the move was made, but company officials indicated such might be the case in the event no serious trouble was encountered at the test. It was last reported drilling below 11,260 feet. It is south of Bradley in Grady County.

In the Cement field of Caddo County, W. L. Miller et al's Garner 2, SW NW SW 26-6n-10w, was making a poor showing, filling 3000 feet with salt water after perforating between 4133 and 4142 feet. The well had been plugged back to 4385 feet and when perforated between 4118 and 4132 feet, made 10,000 cubic feet of gas.

Other deep test for the state, Coline Oil Company's Johnson 1, SW SE NE 1-2n-8w, northwest of Marlow in Stephens County, filled with water after being shut in for 24 hours. It was at a plug-back depth of 9086 feet. The well was originally drilled to 10,001 feet, fourth deepest test in the state at the time.

January crude runs to stills decline

Washington, D.C.—Crude runs to stills in January dropped slightly to a daily average of 3,158,000 barrels, but despite the 15,000 barrel decrease from December were 120,000 barrels above the January, 1937, level, it was announced by the Bureau of Mines March 16. Total crude runs for the month were 97,900,000 barrels.

Receipts of crude at refineries totaled 99,974,000 barrels, of which 97,879,000 was domestic and 2,095,000 foreign oil, it was stated. Imports, at 68,000 barrels a day were 9000 barrels under the December level.

Since runs to stills and fuel and losses of 206,000 barrels were under receipts, stocks of crude at refineries increased, rising from 51,041,000 barrels at the opening of the year to 52,909,000 barrels January 31, it was reported.

Company, Well and Location	Init. Prod. Bbls.	Depth
PONTOTOC COUNTY—		
Magnolia, Swift 1, ne se se 3-1n-7e..	*	5004
Sinclair Prairie, Burris 18 (owrec) sw ne nw 27-2n-7e	350	2560
POTTAWATOMIE COUNTY—		
Magnolia, Singleterry 1, se se sw 15-7n-4e (owpb)	567	3712
Indian States, John Hickey 1, se se nw 32-11n-4e	*	5274
SEMINOLE COUNTY—		
Gulf, S. Peter 1, se se ne 23-5n-7e (owpb)	75	4220
Francis Oil & Gas, V. V. Harris 2, ne nw nw 4-6n-6e	250	2870
W. C. McBride, Inc., Harbert 1, nw se sw 20-6n-7e	14	2740
Wood Oil Co., Maxey 1, nw sw nw 1-8n-6e	220	4164
Sinclair Prairie, Fixico 1, se sw nw 23-9n-6e (owpb)	15	4155
Myers & Halko, Klabzuba 1, se se nw 15-10n-6e	*	2116
STEPHENS COUNTY—		
Magnolia Pet., Wilson 4, sw se nw ne 34-1s-5w (owdd)	6	1045
TILLMAN COUNTY—		
Grimes et al, Laney 1, nw nw nw 3-3s-18w	*	4020

*Failures; †Junked; ¶Million cu. ft. gas.

Barber County wildcat has good Wilcox show.

* * *

McPherson County gas flow changing to oil.

Wichita.—Although drilling activity in Kansas did not come up to the peak reached two weeks ago, the drilling picture continued healthy as more and more attention was given numerous wildcats making hole and several starting in outpost areas. Barber County reported a well showing for a Wilcox-sand producer; Ellis, McPherson and Reno Counties reported troublesome wildcats which may be openers. Dickinson and Barton Counties were getting important wildcat starts.

Possibility of opening Wilcox sand production for Barber County is being watched for at Tom Palmer et al's Warwick 1, CNW 29-31s-10w, 6 miles east of the Whelan pool. A core from 4780 feet in Wilcox sand had a good showing of oil. Production in the Whelan pool is from Mississippi chat.

Farris, Duwe and others continued having trouble with Hadley 1, SE NE SE 12-11s-18w, a wildcat 1½ miles south of the Burnett pool of Ellis County, preparing to cement casing for the fifth time after failing to get a water shut-off. When the last plug was drilled the hole filled 1600 feet with oil and 200 feet with water. More water followed complete penetration of the plug. Bottom is at 3146 feet.

Cities Service Oil Company's Kreie 1, CNW 27-23s-10w, at the western edge of Reno County, was to plug back to 3810 feet and perforate casing to test a show of oil in lime at that depth, nothing showing between that and 4005 feet in Siliceous lime. Seven-inch casing was being run to 3894 feet. The test is 7 miles northeast of the Zenith pool of Stafford County, where production is from Misener sand.

Darrah-Aurell & Williams' Decker 1, SWc SE 12-21s-2w, 2½ miles northwest of the Graber pool of McPherson County, was swabbing 2 barrels of oil per hour from 3005 feet in chat. The well blew in two weeks ago, making approximately 7,000,000 cubic feet of gas and spraying some oil. Drilled deeper and after setting overnight, it filled 2600 feet with fluid, 2500 feet of which was water. It may be drilled deeper for completion.

A new wildcat venture for northeastern Kansas is Thorpe Drilling Company's Morse 1, NWc SW 11-13s-1e, 2½ miles west of Abilene in Dickinson County.

Three miles northeast of the Heizer pool of Barton County, Silverstein & George were preparing to spud Otte 1, SEc NW 2-19s-14w. Cable tools were being rigged up. The Heizer pool, opened in 1935 by Skelton Oil Company's Otte 1, CSE SE 16-19s-14w, has only the discovery producer, making oil from Kansas City lime at a plug-back depth of 3255 feet.

Six miles southwest of the Lake City pool in Barber County, Carter Oil Company and Wentz Oil Corporation's Lytle 1, CNE NW 6-32s-14w, was coring below 4743 feet in lime. It had a small show of oil from 4736 to 4743 feet.The Lake City

KANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Republic Nat'l Gas, Bloomer "B" 2, nw nw nw 14-17s-11w	731	3337
Lebow & Bennett, Steckel 2, sw nw sw 1-20s-11w	1886	3275
Gulf Oil, Nicholas 3, nw nw sw 12-20s-11w	1969	3283
BUTLER COUNTY—		
Steinbuchel et al, Fox 1, nw se ne 25-26s-3e	*	1010
ELLIS COUNTY—		
Magnolia Pet., Johansen 10, se ne se 22-11s-17w	2203	3372
Shell Pet., Rumsey 4, ne nw nw 23-11s-17w	2342	3379
Deep Rock Oil Corp., Baumer 28, ne ne se 27-11s-17w	3339	3409
Champlin Ref. Glatheart 1, nw sw se 29-11s-17w	1281	3631
Phil-Han Oil & Seeley, Smith 1, sw nw sw 12-12s-16w	*	3410
ELLSWORTH COUNTY—		
Gulf Oil, H. Schroeder 1, s½ s½ sw¼ 20-17s-9w	1613	3218
HARVEY COUNTY—		
Willhelm & Nye, Cunningham 1, cw½ e½ ne se 19-23s-3w	847	3369
KINGMAN COUNTY—		
Skelly Oil, Conley 2, cw½ se sw 20-27s-10w	¶68.7	3950
MARION COUNTY—		
Johnson, Metz 1, sw sw sw 24-17s-4e	*	350
McPHERSON COUNTY—		
Jeff Archer & Crane, Templin 1, nw sw se 32-17s-3w	*	3652
RENO COUNTY—		
Shell Pet., Welch "A" 5, cw½ w½ sw¼ 9-24s-4w	344	3373
RICE COUNTY—		
Continental et al, Johnson 2, se se sw 12-18s-8w	2837	3240
Shell Pet., Lantz 1, sw se nw 32-20s-7w	100	3350
ROOKS COUNTY—		
Elwell & Wenzel, Zimmerman 1, ne ne nw 15-9s-18w	*	3760
RUSSELL COUNTY—		
J. C. Shaffer, Inc., Cram 6, nw ne se 11-14s-16w	613	3075
Transwestern Oil, Cram 3, ne sw se 11-14s-15w	890	3279
Carter Oil, Josephine 1, se se se 7-15s-13w (owdd)	2170	3212
Gulf Oil, Michaelis 10, sw sw sw 32-15s-13w	1229	3376
R. E. Hess et al, Reinhardt 1, ne ne sw 36-12s-14w	*	3165
STAFFORD COUNTY—		
Cardinal Oil & Carraker et al, Sittner 1, sw sw sw 4-22s-12w	*	3700
Stanolind O&G Harms 1, nw nw ne 13-22s-13w	1985	3682
Atlantic & Phillips, McNaghten "A" 3, ce½ e½ ne¼ 27-24s-13w	1619	4100
WOODSON COUNTY—		
Aikman & Braden, Arnold 2, 35-23s-14e, cw½ e½ w½ ne¼	20	1645

*Failures; †Junked; ¶Million cu. ft. gas.

pool was opened in 1937 by Pryor & Lockhart's Gant 1, Section 7-31s-13w. Initial production was 90 barrels of 41-gravity oil from Viola lime at 4438 feet.

Carter Oil Company's Weisner 1, SEc 11-12s-18w, in the Walters pool of Ellis County, was completed for a potential of 1539 barrels of oil. Production was from 3622 feet in Siliceous lime following acidization. There was no water showing with the oil.

Sinclair Prairie Oil Company's Frederick 1, SWc SE 16-16s-11w, a wildcat 2½ miles south of the Davidson pool, Barton County, was drilling ahead after finding small shows of oil in three different corings of the Lansing lime. They were taken from between 3118 and 3140 feet.

In the Kraft pool, Barton County, Skelly Oil Company's Gorsshardt 1, NEc 15-17s-11w, filled 1800 feet with oil in 14 hours after plugs were drilled at 3328 feet where 7-inch casing had been set. Production is from Siliceous lime between 3327 and 3329 feet.

Schermerhorn Oil & Gas Company's Strong 1, CEL SW 26-18s-16w, was a new location at the south end of the Otis pool of Rush County.

Largest producer in the Zenith pool, Stafford County, is Stanolind Oil & Gas Company's McComb 1 "B", SE NE SW 14-24s-11w, which made a potential of 2625 barrels of oil, natural. Pay was the Misener sand, had from 3795 to 3815 feet.

Cities Service Oil Company et al's Mollhagen 1, CWL NE 29-17s-9w, third producer in the Schroeder pool of Ellsworth County, was nearing completion. A drill-stem test was made after Siliceous lime was drilled to 3238 to 3247 feet and when opened 30 minutes, filled 2370 feet with oil. Fourth producer for the area will be Cities Service Oil Company et al's Schroeder 1-B, NEc 30-17s-9w. It was to be acidized after filling 1200 feet with oil from Siliceous lime at 3247 feet.

In Rooks County, Carter Oil Company made location for Leist 1, CSW SW 10-18s-17w, 3½ miles northeast of Dopita, in extreme northwestern Kansas.

Kansas association holds forum on well spacing

The Kansas Independent Oil & Gas Association, meeting March 14 at Wichita, heard Burdette Blue, president of Indian Territory Illuminating Oil Company, Bartlesville, present a plan in which well spacing would be employed as a means to eliminate drilling of unnecessary wells. The many angles of the plan were discussed in an open forum following the talk. H. A. Meyer, managing director of the association issued notice of the meeting.

Lisbon spacing hearing at New Orleans March 22

The Louisiana Conservation Commission has called a hearing at its offices in New Orleans for Tuesday, March 22, at 10:30 a.m. on a proposed change in the spacing rule in the Lisbon field from the present 20-acre space to a 40-acre space. Evidence on field conditions will be presented and discussion of the proposed change heard. All interested persons have been invited.

NEW MEXICO

Lea County development is maintained at steady rate.

* * *

Eunice completion increases flow to 106 barrels hour.

Hobbs, New Mexico.—Lea County development is maintaining a steady level. Five fields shared nine new operations the past week, although no new projects were launched in the Vacuum area, which has been showing the greatest gain in drilling.

Air blowouts experienced by tests in the Vacuum field in loose sand formation above the salt section offers the only drilling hazard of any consequence. Reports indicate that the State Oil Conservation commission will require the landing of an intermediate string of pipe on top of the salt to cope with the air. Amerada Petroleum Corporation's State 1-V-B, an inside location, was forced to skid rig because of inability to handle the air flow at 2033 feet. Operators have lately made a general practice of cementing a long string of surface pipe, then securing five or seven-inch casing in the big lime section above the oil zone.

Banner Completion

Texas Pacific Coal & Oil Company's State 8-A, C SE SE 7-22s-36e, near the southwest edge of the Eunice field, proved to be the banner completion of the week, having flowed 76 barrels oil natural the first hour, and had increased to 106 barrels the fourth hour. The hole is bottomed at 3838 feet. Unusually large volume of gas was encountered when rotary returns were lost at 3447 feet.

Cities Service Oil Company's Closson 3-AA, C NE SE 18-22s-36e, is a new southwest outpost project. Operations have been started on Gulf Oil Corporation's State-Bell 7-F, C SW NW 36-20s-36e and Stanolind Oil & Gas Company's Gilluly 14-A, C SW NW 25-20s-36e, both in the northwest portion of the field.

Continental Oil Company's State 3-E, diagonal southeast offset to the above large producer, failed to find the oil zone at a normal level and reached water in drilling to 3877 feet, or 277 feet sub-sea. A nitro shot at 3789-3877 feet enabled the well to flow 119 barrels of 31 gravity oil and 16 barrels water initial on ¾-inch choke.

Two new projects assigned the Skelly sandy-lime field involve outpost locations. Inter-Coast Petroleum Company and Clower's State 1, SW SW NW 2-23s-37e, has drilled below the surface pipe. Gulf Oil Corporation has rigged up on Nick Alley 1, C NE SE 10-23s-37e. The latter has also started work on McCormack 4, C SW SE 32-21s-37e, offsetting production in the Hardy area.

A minor southwest extension for the Monument area is to be sought by Two States Oil Company's Pete Etcheverry 1, SE SW NE 10-20s-36e, situated on a Gulf Oil Corporation farmout. Continental Oil Company et al's Sanderson 1-B-14, NE SW SE 14-20s-36e, flower 36 barrels per hour natural on ¾-inch choke from lime at 3872 feet. Gulf Oil Corporation's State-Kutter 4-C, C SW NW 18-19s-37e, offsetting production on the northwest edge of the field, is a new test. It will eventually cause the drilling of nine progressive offsets, providing each well in the order drilled registers favorably.

Western Gas Company's Matkins-Gulf 1, C SE SE 15-23s-36e, is seeking a mile east extension for the original Lynn pool. It is situated in an area due to yield dry gas.

The Texas Company's Corbin 1, western Lea County wildcat, encountered anhydrite break in Permian lime section at 4682 feet, and was drilling at 4707 feet, carrying 700 feet of oil from upper lime body.

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
Nash et al, Stevens 2-B, c ne nw 13-17s-30e	231	3500
LEA COUNTY (Eunice)—		
Continental et al, Lockhart 3-B-31, c sw se 31-21s-36e	¶25 & 98	3924
Continental, State 3-E-17, c nw nw 17-22s-36e	119	3877
T. P. Coal & Oil Co., State 8-A, c se se 7-22s-36e	2500	3838
LEA COUNTY (Langl'e)—		
Anderson-Prichard, Harrison 1, sw sw sw 23-25s-37e	135	3347
LEA COUNTY (Mattix)—		
Continental et al, Jack 1-A-20, c ne se 20-24s-37e	140	3585
LEA COUNTY (Monument)—		
Continental et al, Sanderson 1-B 14, ne sw se 14-20s-36e	1000	3872
LEA COUNTY (Penrose)—		
Continental et al, Elliott 1-B-9, c sw nw 9-22s-37e	100	3724
Repollo, Christmas 3, nw nw ne 28-22s-37e	200	3726
LEA COUNTY (Vacuum)—		
Amerada, State 1-V-B, c ne sw 36-17s-34e	†	2033
Geo. F. Getty, State 1-F, c ne ne 36-17s-34e	750	4550

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS FIELDS

Sand Hills Ordovician zone extended south.

* * *

Prospective Slaughter extensions near showdown.

San Angelo.—Ordovician horizon in the Sand Hills field, Crane County, was extended ¼-mile south when Gulf Oil Corporation's Waddell et al 7, C SW SE PSL Section 4, Block B-27, earned a potential of 3655 barrels natural from soft gray lime at 6002-12 feet. First Simpson was reached at 5828 feet, and top of Ellenberger, producing zone, at 6001 feet, with an elevation of 2544 feet. Oil tests 45 degrees, and no water is present. The gas/oil ratio was placed at 810/1. This new completion is south of the largest Ordovician producer in the state, but is about 45 feet lower on the pay.

Humble Oil & Refining Company's Lewis-Wardlaw 1, Tom Green County wildcat, is bottomed in Ordovician series at 7044 feet, and is reaming 8¾-inch hole to land pipe. No oil or gas shows have been reported. Magnolia Petroleum Company and Tex-Mex Petroleum Corporation's J. H. McKee 1-a, northern Pecos County prospect, has encountered an unusual thick body of Simpson in drilling to 5425 feet. Top of Simpson was called at 4775 feet, or 2390 feet sub sea, and no shows have been reported since passing up nominal oil and gas yield at 5289 feet. Frank S. Perkins et al's E. P. Cowden 1, southwestern Andrews County wildcat, is making the first try for Ordovician production in the upper portion of the Permian basin, and was drilling at 6130 feet.

Prospective extensions for the Slaughter field, Hockley County, by Gulf Oil Corporation were nearing a showdown stage late last week. This company's Gordon 1, NWc PSL Section 12, Block X, about 2/3 mile southeast of production, bailed 1-1/3 barrels fluid per hour, testing 1 percent salt water, at 5009 feet, or 1498 feet sub sea. It is below the sulphur water level reached by the discovery, thereby indicating an erratic water level for the structure. First free oil was logged by Gordon 1 at 4970 feet, and first salt water at 4995 feet. Water did not increase in drilling deeper. Gulf Oil Corporation's Mallett 1, NEc PSL Section 6, Block X, 1¾ miles southwest of the discovery, and about level on the solid lime contour, was drilling at 4990 feet, with an elevation of 3552 feet. No shows were recorded.

Trend of production to the southeast of the Gaines County portion of the Wasson field was more definitely outlined when Shell Petroleum Corporation's Robertson 1, NWc NE Section 344, Block G, 1½ miles east by south of production, tested half barrel sulphur water at 5277 feet. Hole will be deepened for geological information, as the Wasson pay was due near the 5000-foot level.

Negotiations are pending for the drilling of two wildcats in Gaines County. Virgil R. Riddle et al have purchase orders from majors for protection against a test to be drilled on the J. B. Brown tract, NW C&M Section 26, Block G, 8 miles southeast of Seagraves. Finley, Cherry et al have obtained dry hole contributions and leases from 5 majors towards the drilling of a test on the Earl Morrison tract, NW PSL Section 6, Block A-21, 4½ miles northwest of Landreth Production Corporation's Kirk 1, small wildcat pumper completed August, 1936, as the first oil producer in the county. The well is shutin for lack of a market. A second test for this area is reported to be pending, as a number of leases are due to expire shortly.

Rated as the most consistent area in the north basin, the Bennett field, Yoakum County, is also yielding the largest wells. Texas Pacific Coal & Oil Company's Bennett 5, SEc NW Section 678, inside location, flowed 1456 barrels initial after nitro shot in lime at 5085-5278 feet, earning an allowable of 181 barrels daily. The company has 5 wells on the 160-acre site, prorated to 846 barrels of 34-35 gravity oil daily. Development of the field is assuming large proportions.

An outpost test for the southwest edge of the Harper field, Ector County, will be started shortly by Blackstock Oil Company as result of the purchase of the S½ SE T&P Section 27, Block 44, T-2-S, for $100 per acre cash and $250 per acre payable from production. The lease calls for 1/6 royalty. Broderick & Calvert's Parker 4, NW NE SE Section 22, an inside location, was rated at 2980 barrels initial after nitro shot at 3975-4182 feet. It is 18 barrels short of the record potential for the field previously established by the same operators.

The Texas Company has started operations on H. H. Wilkinson 1, near NE NW NW T&P Section 32, Block 34, T-1-N, southwestern Howard County wildcat. Drilling obligation was assumed in acquiring the 2000-acre block earlier this year. Location is about 5 miles northwest of the Harding pool.

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Gulf, B. F. Block 12	434	3142
E. Cooper 23	369	3076
Magnolia, Fee (No. 244) 36	274	2960
Southwest Prod Co., Percival 1	¶91.3	2695
Texoma Nat'l Gas Co., Crutchfield 3-T, sec 59	¶17	3749
GRAY COUNTY—		
Kewanee Oil Co., J. S. Morse 14-A	271	2489
Southern Pet. Explor. Co., Vaughn 11	777	3230
Texas Co., C. S Barrett 7	382	3235
HUTCHINSON COUNTY—		
Dril'ing & Explor., Inc., Haile 16	327	3080
Kewanee Oil Co., Tom Lewis 34	547	3030
Mid-States Oil Corp., J. A. Whittenburg 17-A	705	2966
Simpson Oil Co., Harvey Sisters 1	608	3088
Texas Co., J. K. Quinn 8	500	3100
WHEELER COUNTY—		
Magic O&G Co., Koons 5	14	2377

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANDREWS COUNTY (Fuhrman)—		
Sinclair Prairie, J. W. Gowens 1	35	4505
ECTOR COUNTY (Foster)—		
Barnsdall, Foster 9	1120	4185
ECTOR COUNTY (Goldsmith)—		
Continental, T. P. Land Trust 6-B-35	734	4265
Gulf, Goldsmith 71	2288	4180
ECTOR COUNTY (Harper)—		
Barnsdall, Cowden 4	1547	4170
Honolulu Oil Corp.-W. A. Black, Cowden 1-C	322	4243
Shell, Cowden 7-B	767	4230
Lou Wentz Oil Co., Parker 1-B	321	4385
Parker 2-D	585	4259
ECTOR COUNTY (Jordan)—		
Atlantic, University 1-B	2472	3600
HOWARD COUNTY—		
Conoco & Group 2 Oil Corp., B. Overton 5-A	840	2512
Plymouth Oil Co., T. P. Land Trust 15	733	2510
Shasta Oil Co., Texas Land & Mtg. Co. 2	1497	2871
IRION COUNTY—		
L. R. Pearson et al, J. M. Nutt 7	*	1585
JONES COUNTY—		
Condor Pet. Co., C. Holt 7	157	1915
Fain-McGaha Oil Corp.-Sinclair Prairie, A. M. Lyckman 2	1488	3249
Iron Mt. Oil Co.-Humble, Jones-Stasney-Bowden 4	3600	3206
R. G. Trippett et al. Guitar 16	55	2008
PECOS COUNTY (Pecos Valley)—		
Dorr et al, Payton 2	93	2050
PECOS COUNTY (Yates)—		
Cardinal Oil Co., Tippett 1-O	48	1380
SCHLEICHER COUNTY—		
Tex-Tor Oil Corp.-Bryson O&G Co., Judkins-Spencer 1	*	6450
REEVES COUNTY—		
Sid W. Richardson-C. R. Mallison, Brown 1	*	4638
SCURRY COUNTY—		
T. G. Shaw Oil Corp., First Nat'l Bank (Ft. Worth) 1	†	3369
UPTON COUNTY (Gulf-McElroy)—		
Gulf, Crier-McElroy 28	334	2955
UPTON COUNTY (McCamey)—		
Blaine Oil Co., Powell 4	1068	2462
Geo. F. Getty, Shirk-Gulf 1	1150	2680
Peerless Oil Corp., Shirley-Conoco 5	160	2157
Pure, Hughes 9	257	2611
WARD COUNTY—		
Gulf, O'Brien 92	560	2760
WINKLER COUNTY (Kermit)—		
Humble, Colby 28-A	363	3000
Magnolia, J. B. Walton 136	951	2951
T. P. Coal & Oil Co., W. E. Baird 2	1059	3075
YOAKUM COUNTY (Bohago)—		
Ohio, Claywater 1	*	5353
YOAKUM COUNTY (Bennett)—		
T. P. Coal & Oil Co., Ruth Bennett 5	1460	5278
YOAKUM COUNTY (Wasson)—		
Humble, Abilene State Bank 1	328	5005

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH TEXAS FIELDS

New Archer field 9 miles south of K-M-A.

* * *

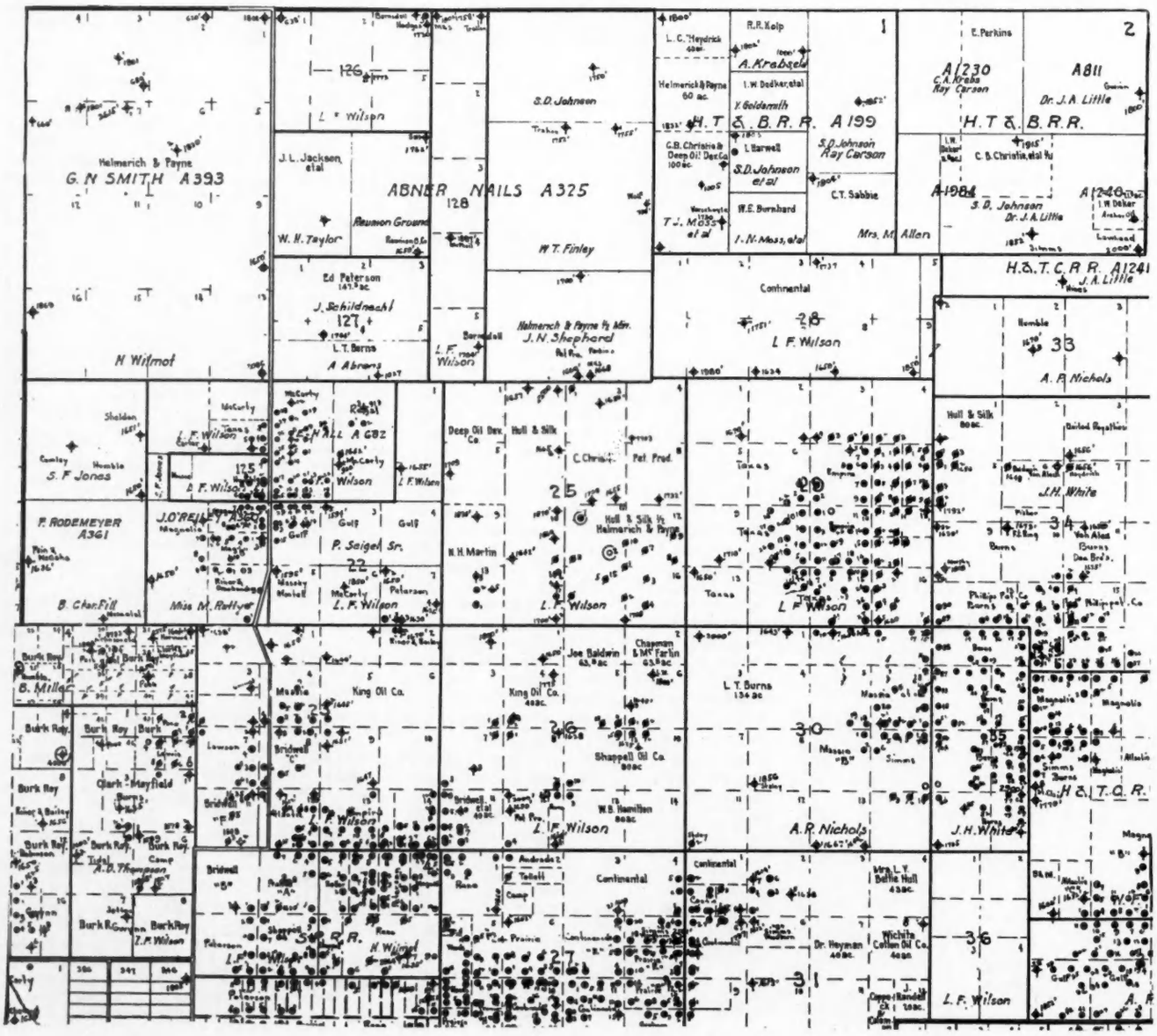
K-M-A west flank enlarged 2¾ miles.

Wichita Falls.—Rival for the K-M-A field, currently the most active drilling center in the United States, appeared on the horizon March 14 when a north central Archer County wildcat flowed natural from the Strawn sandy-lime formation. Preliminary gauge given by L. V. Hull, W. W. Silk and Helmerich & Payne, Inc.'s discovery on the L. F. Wilson ranch, NWc SE A.T.N.C.L. Section 25, amounted to 127 barrels of 42 gravity oil in one hour from saturated zone at 3841-3858 feet, with an elevation of 1034 feet. Well was shut in for storage and pipe line connection before attempting a longer flowing test.

This new strike definitely establishes a new field. Production is from same sub-sea depth as nearest producers in the K-M-A deep area, situated 9 miles to the northwest, but dry holes along the south and southeast flanks of the latter precludes any possibility of the two being on the same geological feature. The Wilson ranch well is 200 feet lower structurally than several small Strawn producers in the Chalk Hill field, located about 7 miles to the southeast. Chalk Hill is one of the most productive Canyon lime areas.

Shallow production is present on 3 sides of the Wilson ranch deep producer and involves a series of pools that followed opening of the Panther pool in December, 1916, by Panther Oil Company's Wilson 1, A.T.N.C.L. Section 12, rated at 35 barrels from sand at 1632-40 feet. Operation of shallow leases to the east and west of the discovery by Gulf Oil Corporation, The Texas Company, Continental Oil Company, and Cities Service Oil Company enabled them to be the only majors with protection against the deep zone.

Pre-discovery interest in the Wilson ranch deep project was largely con-



Forerunner of another drilling campaign in the Strawn sandy-lime horizon is indicated by L. V. Hull, W. W. Silk and Helmerich & Payne, Inc.'s L. F. Wilson 1, NW SE A.T.N.C.L. Section 25, north central Archer County, indicated by circle, which flowed 127 barels of 42 gravity oil natural in one hour at 3858 feet. It is on a line between the Chalk Hill and K-M-A deep areas. Nearest deep failure is 2¼ miles to southwest. (Map by Heydrick Mapping Company, Wichita Falls.)

fined to a few speculating independents. This was due to the completion of Burk Royalty Oil Company and Barney Cockburn's J. B. Miller 1, A.T.N. C. L. Section 20, situated 2¼ miles to the southwest, last October as a failure at 4006 feet, with an elevation of 1034 feet. No shows were recorded. Since this is the only deep test in general vicinity of the new strike, lease trading may expand over a wide area as was the case of K-M-A.

North Texas independents invested heavily in the K-M-A deep field, and are confronted with offset drilling obligations that will tax their financial resources. They are not in a position to make a repeat play in Archer County. This accounts for the fact that fairly close in acreage was selling for $600 per acre, half cash, the past week, while double this figure was paid late last year and early in January for light producing sections of the K-M-A field.

K-M-A Enlarged

Large scope of prospective oil territory was thrown open to development on the west flank of the K-M-A structure when D. H. Bolin and Jim O. Whittington's Waggoner Bros. 1, SE SE SW H&TC Section 21, Block 7, flowed heads after plugging off water recorded by electrical formation surveying tool. No estimate was made of the probable initial yield. This outpost plugged back from 3975 feet, or 2900 feet sub-sea, to sand at 3940-65 feet. It is structurally low, having topped the big lime at minus 2765 feet. Location is 2¾ miles northwest of Consolidated Oil Company et al's Ferguson 4, recent completion for the Kadane sand area. The latter is credited with having flowed 350 barrels of oil in one hour on gauge taken after proration test at 3810 feet, or 2790 feet sub-sea.

Current deep production is about 7800 barrels daily, according to Railroad Commission's records, from 150 wells, including 19 pumpers and 1 former producer now used for gas input purposes.

Wildcat operations in a general northeast direction from the K-M-A field and around Iowa Park have exacted a toll of 4 Strawn failures by independents within the past. Drilling obligations were assumed as part consideration for leases. Two dry holes recorded the past week. E. T. Noble et al's K. P. Abernathy 1, Section 9, Tarrant County School Lands, logged top of lime at 3845 feet and abandoned at 4200 feet, with an elevation of 1045 feet. Grace & Woods' W. C. Williams 1, NEc SW Section 13, Tarrant County School Lands. The latter was carried to 4680 feet. It has an elevation of 1074 feet.

Other K-M-A Results

Continental Oil Company's Waggoner Bros. 1-E, SWc Lot 2, BS&F Section 11, offsetting a small producer on the northwest edge of the main held, showed salt water when tested in Ellenberger at 4114 feet, or 3058 feet sub-sea. White sandy-lime core at 4094-4114 feet, identified as the Bend and Ellenberger contact, carried oil show. Top of lime marker was called at 3643 feet. Hole will be plugged back to shoot broken Strawn pay between 3820 and 3901 feet. Completion of this well below the 4000-foot zone would enable it to qualify for a top allowable of 63 barrels, or 5 barrels above the quota given the wells in the regular pay. Only two wells, located on the northeast edge, have the 63-barrel allowable. Ryan Consolidated Petroleum Corporation's G. E. Nance 128, near the above Ellenberger test, failed to respond to 120-quart nitro shot at 3908 feet, and was later shot with 1000 quarts at 3832-3905 feet. Top of lime was called at 3611 feet, with an elevation of 1016 feet.

Prince Bros. et al's C. P. Sheldon 1, situated 2200 feet north of the original big producer in the Kadane sand zone, missed the sand in drilling to 3915 feet, and is estimated at 50 barrels daily. Lime marker was topped at 3690 feet, with an elevation of 1020 feet. Sheldon 1 is on a 2.9-acre strip, near the south end of the river bridge. Bonus of $15,000, part cash and balance from production, and a quarter over-riding royalty was paid for this strip, thereby establishing a record for the field. E. C. Oil Company's J. F. Miller 1, W. R. Eaves Survey, A-447, situated north of a U-bend of the river, encountered water at 3881-82 feet, with an elevation of 1013 feet. Hole will be plugged back to test oil shot at 3857-81 feet. Lime was topped at 3650 feet. The water zone was found at a lower level on the northeast edge of the field when Burk Royalty Company's W. W. Overby 1, SEc 194-acre tract, J. M. Sharp Survey, A-262, tested 1 bailer salt water per hour at 4113 feet, and was drilling deeper. No oil shows of any consequence were logged above the water. Top of lime was reported at 3770 feet, with an elevation of 1004 feet.

Erratic performance of tests within the proved area has not slowed down drilling operations. The last weekly report listed 31 new projects, making a total of 211 operations on the current field report. Total of 78 tests are in process of completion, or else have finished drilling to the final casing point, and 52 tests were drilling between casing points. Surface pipe stage was credited to 13 listings. Derricks and rigs accounted for 24 operations, and there were 44 locations.

V. A. Huff, Bert Ligon et al's C. F. Collins 1, J. T. Tyler Survey, A-568, wildcat situated 4 miles west of Wichita Falls, has been abandoned at 4357 feet after recording several minor oil shows in upper Strawn. Top of big lime was logged at 4167 feet, with an elevation of 1015 feet.

NORTH TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY (K-M-A)—		
Gem Oil Co., Ferguson 1, blk 16..	560	3871
ARCHER COUNTY—		
Alexander, Tr., Taylor 3, blk 17..	10	659
Hilburn et al, Wichita Valley 1, blk 10	18	1790
COOKE COUNTY—		
Kingery Bros. et al, Johnson 5....	100	1238
Mudge Oil Co., Johnson 2.....	97	1231
Pace Pet. Co., Winstead 6-B.....	100	1192
Robinson et al, Otto 12-A, blk 5..	15	894
HASKELL COUNTY—		
Superior O&G Co., Hendrick 1....	*	3254
JACK COUNTY—		
Royal Pet. Corp., Jones 1-C.....	98	3236
MONTAGUE COUNTY—		
Seitz, Comegys & Seitz, J. W. King-Conoco 1	336	1756
WICHITA COUNTY (K-M-A)		
Bohner et al, First Nat'l Co. 2-A, blk 26	600	3860
Christie-Hickman Drl. Co., Bolding-Lowry 3, blk 23.....	960	3877
Clark et al, First Nat'l Co. 1, blk 28	510	3882
Deep Oil Dev. Co., First Nat'l Co. 6 blk 27	704	3842
Fain-McGaha Oil Corp., Fain 2....1032		3826
G. E. Grininger et al, Pace 1, lot 16	672	3875
Humble, First Nat'l Co. 13-C, blk 26	840	3860
Pace 1, blk 118.....	440	3860
Jack Kadane, Kemp 1-B, lot 3.....1008		3740
King Oil Co.-Perkins-Cullum, Mangold 4, blk 38.....	824	3726
Stoddard et al, Mitchell 1, lot 17...	344	3954
Wilson-Ligon & L. T. Burns, Munger 3, blk 31.....1104		3875
WICHITA COUNTY—		
Clark et al, Bickley 43.....	*	889
Freundlich et al, Love 4.....	*	535
Hart et al, Krohn 1, blk 322.....	*	2026
Hunter et al, Waggoner Bros. 2, sec 8.....	5	670
Waggoner Bros 3, sec 8.....	4	671
Kriss et al, Dorris 17.....	*	525
Lanning, Tr., Roediger 1.....	*	600
Medders et al, Fields 1, sec 32....	*	4510
Mogren & Anderson, Mertens 2....	*	905
Perkins-Cullum Oil Co., Burnett 13-A sec 1	68	1530
Rathke Oil Co., T. L. Burnett-Gulf 2-A, sec 4.....	*	718
WILBARGER COUNTY—		
Phillips, Waggoner 24-NN, sec 42.	107	2532
YOUNG COUNTY—		
Atchley et al, Benson 6, sec 1392..	20	947
Beavers et al, Cooper-Seibold 3, sec 81	*	1196
Humphrey, Jeffery 2, sec 467.....	120	4175
Sams & Watson, Cullers 4.....	*	593
Wolfe et al, Wilson 4, sec 67.....	*	1124
Rogers et al, Durrett 1, sec 182....	*	420

*Failures; †Junked; ¶Million cu. ft. gas.

Rodessa Arkansas gas/oil ratio hearing

The Arkansas Board of Conservation is scheduled to meet Monday, March 21, to decide whether to raise the gas/oil ratio in the Miller County part of the Rodessa field from the present 4000 to 1 to 5000 to 1. It is reported that the bottom hole pressure in the Miller County part of Rodessa has declined approximately 60 percent in the last 9 months.

Meanwhile, Texas Railroad Commission was to have met Saturday, March 19, to hold a hearing on a proposal to reduce the gas/oil ratio on the Cass County side of Rodessa from 5000 to 1 to 2000 to 1.

In Miller County, Arkansas, the majority of opinion appears to favor high gas/oil ratios, while on the Texas side of the field the prevalence of opinion leans toward low ratios.

East Texas field allowable again half million barrels

Kilgore, Texas.—Allowable production of the East Texas field regained the 500,000-barrel level daily on March 14 when the addition of 10 wells boosted the proration quota to 500,072 barrels, according to the Texas Railroad Commission's records. The actual yield falls below this figure since the field is temporarily on a six-day basis.

On the above date 24,720 wells were sharing in the production, and 114 additional wells were listed as dormant.

The current weekly completion report lists 36 new wells, and majors were

credited with 21 of the total. Independents have been setting the pace on completions, and are responsible for the majority of the 68 rigs in service.

Recent completions include new wells on some of the most densely drilled properties. F. W. Fischer et al have added their ninth producer on the G. W. Wilson 3½-acre tract, and in the same area the Ambassador Oil Corporation has completed its fourth well on the Cunningham-Hamilton five-acre lease. James T. Smith et al have recorded their fifth well on the 3.45-acre Morse lease. Overton Refining Company's Butts 36/100-acre lease has added a second well.

EAST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Atlantic, Young 2-E (5-ac)	1500	3807
Gulf, Thrash 18 (83.56-ac)	7200	3733
Humble, Price 57 (432.05-ac)	8500	3732
Silvey 61-A (450.56-ac)	9000	3709
Shell, Brooks 25-B (174.69-ac)	1200	3687
Brooks 26-B (174.69-ac)	1500	3713
Tide Water Associated, Pinkston 25-B (135-ac)	5400	3770
KILGORE AREA—		
Cal-Tex Corp., Crim 5-a (50.65-ac)	8000	3581
Gen'l American Oil Co., Dee Smith 14 (39.97-ac)	8800	3566
Gulf, Nichols 12 (48.1-ac)	1000	3692
Henry Oil Corp., Laird 12 (8-ac)	5000	3560
Kathleen Oil Co., Peterson 9 (16-ac)	8800	3652
Lacy et al, Davis 7 (15-ac)	7000	3589
Magnolia, Jernigan 12 (79.66-ac)	7300	3725
McMahon et al, Laird 14 (45.1-ac)	8400	3645
McVey et al, Dickson 4, blk 137	1500	3537
Miller et al, Crim 2 (62/100-ac)	2400	3580
Nioco Oil Co., Knowles 8 (7.16-ac)	2000	3566
Sells Pet., Inc., Sibley 8 (18.16-ac)	3000	3600
Stanolind, Christian 10 (86.56-ac)	3200	3682
Tide Water Associated, Hughey 36 (200-ac)	3000	3530
LONGVIEW AREA—		
Atlantic, Penn 1 (1/10-ac)	5000	3545
Baggett et al, Owens 5 (29.11-ac)	750	3736
Owens 6 (29.11-ac)	600	3734
Gilcrease Oil Co., Christian 11 (31.6-ac)	8500	3591
Humble, Hughes 49 (245.6-ac)	6000	3679
Johnson 23 (98.9-ac)	7600	3674
Magnolia, Goolsby 11 (73¾-ac)	9700	3544
Everett 34 (166.96-ac)	8000	3627
Margay Oil Corp., Christian 10-A (16-ac)	8600	3686
Red Iron Drl. Co., Phillips 2 (23-ac)	1200	3640
Shell, Akin 20 (100-ac)	9100	3641
Sinclair Prairie, Akin 22-B (100-ac)	8700	3667
Moncrief 56 (307.5-ac)	9000	3709
Stanolind-Tide Water, Wilhite 8 (29.78-ac)	9300	3685
Sun, Tooke 9-A (49.4-ac)	9500	3703
ANDERSON COUNTY (Cayuga)—		
Tide Water Associated-Seaboard, Wills 6-B	¶85	4086
FRANKLIN COUNTY (Talco)—		
Humble, Dawson 8 (80.45-ac)	172	4315
HENDERSON COUNTY (Cayuga)—		
Harper & Turner, Barton-Stanolind 2	1500	4043
HENDERSON COUNTY (Flag Lake)—		
DeArman-McMillan & S. Hunt's Dowdy-Texas Co. 2	750	3091
CHEROKEE COUNTY—		
Bunn Drl. Co.-J. G. Mayo et al, Bowling 1	*	4071
HILL COUNTY—		
Bell Oils, Inc., Freeland 1	*	1490
NAVARRO COUNTY—		
Natural Pet. Co., Brown 1	*	1737
CASS COUNTY (Hughes Springs)—		
V. A. Hughes, Lyster 1, Wm. Bateman sur	*	4463
CASS COUNTY (Rodessa)—		
Bay Oil Co., Cobb 5, G. Crowder sur	281	6119
Magnolia, Rives 12, Jno. Collom sur	500	6047
MARION COUNTY (Jefferson) —		
Gulf, Ray A-1, J. Hanks sur	264	6079
Geo. Echols, Whitfield 1, R. Bennington sur	480	6019
Hollandsworth Drlg. Co., Hill 2, W. Smith sur	600	5986
Phillips, Denton 1, A. de los Santos Coy sur	600	6183

*Failures; †Junked; ¶Million cu. ft. gas.

SOUTHWEST TEXAS

Several fields in South Coast sector get new sands.

* * *

Agua Dulce extended three quarters of a mile west.

* * *

Jackson County wildcat may indicate new gas field.

Corpus Christi.—A series of new sand discoveries along the Gulf Coastal trend of South Texas bring rise to a possible hot offsetting program. Nueces County led the parade of new strikes with San Patricio and Victoria Counties falling in behind.

This successful drilling program, however, brings about a problem, that of multiple wells. Operators are attempting to prevent excessive drilling on offsets through preplanning of development. Several have uncovered new producing zones, but are not completing wells in them at present. Another, controlling a large block is producing from different sands on a wide spacing arrangement.

Across the coast new zones have been provided during the past few days in the Plymouth, Keeran-Placedo, Turkey Creek, South Clara Driscoll, Agua Dulce, South Agua Dulce, Luby and Stratton pools.

New Plymouth Sand

Having drilled several deep tests in the Plymouth field, San Patricio County, Plymouth Oil Company finally has completed its first well below the regular 5500-5600-foot levels. E. H. Welder 95-C is a producer through perforations at 6156-59 feet, flowing several barrels of crude per hour through 5/32-inch choke. At last reports, the pressures were 650 pounds on tubing and 1000 pounds on casing, but should materially increase before final completion. The test also had a sand at 5855-95 feet, which showed for a distillate producer. The 5800-foot zone corresponds to the Magnolia sand producing south of the main field and across a graben. The Plymouth concern controls a large block under one lease and one ownership, hence a reasonable spacing rule is expected to result. The field is being developed on a 20-acre basis.

Turkey Creek, in Nueces County, presents a different picture. Rand Morgan's Fee 1, 6000 feet south of the producing area, drilled to 5859 feet, finding little sand in the Douglas zone, and that carried salt water. An electric formation test, however, indicated sand at 5641-60 feet, where sidewall samples showed oil saturation and no water. Casing was landed at 5710 feet. This will be a second sand for the field and will bring more offsetting, possibly twin operations.

Luby Hits Also

Luby field's discovery of lower zones apparently is to provide no immediate problem. At this time 4300 and 5000-foot sands are in production. New zones at 5167-78 feet, 5697-5721 feet showed sufficiently on drill stem test to assure commercial production in Seaboard Oil Corporation's J. P. Luby 13, deep test for the Nueces County pool. Neither of these sands will be produced at this time, completion being effected in the 4300-foot zone.

South Clara Driscoll, also in Nueces County, had five new sands indicated in Wellington Oil Corporation and Seaboard Oil Corporation's Dugger 2. The test was carried to 5505 feet, casing set on bottom and perforated at 5340-67 feet with 29 shots and a low pressure well was resulting. The test was carried through several excellent sand bodies which showed for commercial wells so further testing is evident. The acreage is fairly well split up, but a conservative development is anticipated.

Camp Production Company has developed four sands on about 1000 acres of proved land in the Stratton field of Nueces County, and has several more sands which have been uncovered but are not on the production list. Five wells have been drilled over an area one-half mile wide and 1½ miles long, only two producing in the same sand. Wide spacing program will continue with multiple drilling not in prospect for the single ownership block.

Agua Dulce Extended

Union Producing Company continues its development program in the Agua Dulce area of Nueces County with extensions and new sands. C. L. Galladay 1, north of the pool, drilled to 8190 feet, set casing 6849 feet and perforated at 6730-40 feet, where it flowed a large volume of gas and sprayed 36 barrels of gasoline per day through ¼-inch choke, pressures being 2500 and 2800 pounds. This likely is a new sand for the field. The well found a series of wet gas sands. This company extended the field ¾ mile west with Perkins 1, which flowed considerable gasoline through perforations 4830-50 feet. M. L. Rivers 4-A, another well on the west side of the field, found a series of distillate sands and is going ahead around 7200 feet.

Texon Drilling Company is extending the South Agua Dulce field and is furthering activity in the deeper sands for this area with C. J. Horne 1. The well is flowing a large amount of gasoline from perforations at 6275-92 feet.

Stanolind Oil & Gas Company was ex-

tending production 2900 feet southeast in the area recently opened between Placedo and Keeran fields, Victoria County. Vandeberge 1 drilled to 6510, ran casing at 6400 feet. A squeeze job was made at 6360-63 feet to control gas and perforations are now being made lower. Henderson and Pickering 1, discovery well, was completed through perforations at 6372-75 feet. Several other sands were encountered in the new well, but no completion attempt will be made.

SOUTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic, Porterfield C-3 (McCampbell) (perf 6850-56)	550	7236
CALHOUN COUNTY—		
Buchanan & Blanco, Morris-Dunwoody 8 (Heyser)	650	5499
LIVE OAK COUNTY—		
Bleak Hill, Viteri 4 (Ezzell)	59	1518
Southwest, Hill 9 (Ezzell)	36	1499
NUECES COUNTY—		
Houston, Morgan 36 (Saxet)	74	4553
Richardson, Cowles 1, Sec 43 (Luby)	*	7370
Seaboard, Luby 5 (Luby)	450	5082
Smith, Walton 1-A (Saxet)	8	4895
Union, Galladay 1, Agua Dulce Gr (Agua Dulce) (perf 6730-40)	¶10 & 36	8190
Perkins 1, Sec 32 (Agua Dulce)	¶10 & 50	4902
REFUGIO COUNTY—		
Continental, Scott 1, Reojas sur	*	8017
Houston, Rooke 37 (Refugio)	425	6232
Nordan, O'Connor 11-B (Tomoconnor)	1250	5915
Quintana Heard 1 (Tomoconnor)	1750	5991
OConnor 63-A (Tomoconnor)	1300	5939
SAN PATRICIO COUNTY—		
Moore, Kelly 1, lot 24	*	7002
VICTORIA COUNTY—		
Commonwealth, Bennett 8 (Heyser)	350	5750
Magnolia, Lander 6 (Heyser)	450	6034
SAN ANTONIO DISTRICT		
BASTROP COUNTY—		
Collins, Lofton 1, Denson sur	*	2002
Western Gulf, Barton 1, sec 7, dd fr 2927	*	2964
BEXAR COUNTY—		
Ball & Dubose, Miller 1, sec 55	*	825
Parsynen, Fee 1, Lindsay sur	*	1701
CALDWELL COUNTY—		
F & W, Rodenberg 3-A (ne Luling)	150	2256
Millican, Norman, Reed, S. Lampkin 4 (Luling)	112	2105
Ogden, Dinges 4-A (West Dale)	15	2640
Dinger 1-C (West Dale)	*	2415
Philtop, Dorn 5 (Luling)	249	2115
GUADALUPE COUNTY—		
Herring, Appling 1 (Dunlap)	50	2187
Riddle, Weber 1, Torres sur	*	529
MILAM COUNTY—		
Jones, McLennan 20 (Minerva Rockdale)	3	630
MIRANDO DISTRICT		
DUVAL COUNTY—		
Arkansas, Wolfe 1 (N Sweden)	650	5381
Benedum & Trees, Puig 12 (N. Sweden)	525	4770
Brinkoeter, Garza 10 (Seven Sisters)	100	2658
Cox & Hamon, Cuellar-Hagan 3 (Hoffman)	129	2807
Government Wells, Lundell 18 (Lundell)	125	1507
Magnolia, DCRC 24 (Piedra Lumbre)	51	2066
McCarthy, Placker 4 (N. Sweden)	¶10	5390
Navarro, West 2 (N. Sweden)	425	5334
Republic, Bouy 5-A (N. Sweden)	725	3915
Reynosa, Welder 3 (Seven Sisters)	*	2725
McMULLEN COUNTY—		
Mills Bennett, NL & L Co. 1-C, sec 21	*	1511
Harry Ezzell, Fee 1-H, sec 28 (Ezzell)	*	1535
Jones, Ezzell 8-B (Ezzell)	350	1488
Ezzell F-5 (Ezzell)	55	1504
Ezzell F-6 (Ezzell)	100	1520
STARR COUNTY—		
Scarborough, Haden 1, share 47, por 80	*	1596
Wood, Wardner 1 (S. Ricaby)	*	523
Wardner 3 (S. Ricaby)	*	526
WEBB COUNTY—		
Cox & Hamon, Wise 1 (Killam-Oilton)	356	2001
Daubert & Lipscomb, Garcia 1-A (Killam-Oilton)	150	2035
Killam, Garcia-Villareal 4 (Killam)	97	1982
Morrow, Moreno 2 (Oilton)	*	1924
O'Hern, Benavides 4 (Cole-O'Hern)	175	2737
Smith & Hamill, Martin 14 (Oilton)	42	1892
Texola, Martin 1 (Oilton)	200	1915

*Failures; †Junked; ¶Million cu. ft. gas.

New Field Looms

A new pool in Jackson County, about six miles north of Edna, appears possible with Henry C. Adams, H. J. Porter et al's J. W. Foust et al 1, Peter White Survey No. 17, perforating in a Miocene sand encountered 2650-67 feet. The well was carried to 5165 feet and an electric formation test made, after which casing was landed at 2715 feet. On a drill stem test of the upper sand, considerable oily mud and a good gas blow were recovered in two minutes. It is drilled on a geophysical prospect, a farmout from Gulf Oil Corporation.

New Alfred field in Jim Wells County found a bit of discouragement in Smith and Story, Incorporated's Robert Adams 1, 1100 feet northeast of the discovery. Cores between 3249-55 feet, at level with oil sand in the discovery, resulted in only one foot of sand. Drilled ahead to 3375 feet, an electric formation test was run, indicating gas sands at 3247-52 feet and 3357-62 feet. It is waiting on orders, but likely will be abandoned.

Bastrop County gets its first 7000-foot test

San Antonio.—Bastrop County is to receive a 7000-foot Edwards limestone test. Humble Oil & Refining Company let contract to Al Buchanan and rig is being assembled on location of J. S. Hillman 1. The test will be 466 feet from the north line and 3265 feet from the west line of a 458.3-acre lease in the James Cunningham Survey, Abstract 131, about 4½ miles south of Paige Townsite.

Along the same trend, but in Burleson County, Red Bank Oil Company's H. H. Coffield, on the Chreisman prospect, is going ahead below 2500 feet on a 6500-foot Edwards limestone project. Several wells on the prospect have shown oil, but none has resulted in a producer.

An interesting and important geological feature resulted in Hickok and Reynolds et al's Fred Ewert 1, Bexar County test on the Culebra anticline. The well found the base of the Cretaceous unaltered at 2622 feet and is at 2635 feet in the Pennsylvanian, preparing to drill ahead. It was expected by many that the test would encounter schist at the base of the Trinity instead of Pennsylvanian beds.

Maetze extension attempt blows out, sprays crude

Beeville.—Controlling a wild flow of gas and oil, apparently from a 3800-foot sand, H. J. DeArman and Winward Oil Company have cemented O. G. Drier 1, 2250 feet northeast of the discovery well of the Maetze area of Goliad County. The well blew out while drilling at 5535 feet. It was out of control several days, blowing an estimated 35,000,000 cubic feet of gas and spraying considerable 40 gravity crude under a pressure of 3700 pounds. The 4½-inch drill pipe was cemented with 100 sacks and will be shot off at 4100 feet. The hole will be plugged back and sidetracked to recore the 3800-foot zone, top of which was reported at 3803 feet.

Union Producing Company is attempting to open a Pettus sand pool just east of Tulsa Townsite in Bee County. G. A. Ray 55, G. A. Kerr Survey, found the sand with good oil show at 3651-58 feet.

J. B. Chew and Hantho-Nelson, Inc.'s A. McNeill Bell 1, A. Parks Survey, 7 miles west of Largarto in Live Oak County, was still testing. After perforating between 5076-78 feet with two shots, it flowed about 3,000,000 cubic feet of gas and sprayed some 39.7 gravity oil. The rig has been moved off. No separator has been built to test the negligible volume of oil.

North Sweden getting first Hockleyensis sand producer

Laredo.—Circle Oil Company was completing the first producer in the 4500-foot Hockleyensis sand in the North Sweden field of Duval County. This test, Merle West 2, found the horizon at 4537-52 feet and flowed in 10 minutes on drill stem test. Casing was landed at 4532 feet and late in the week the test was cleaning into pits. This horizon was found in a number of tests drilled in the pool, but the majority of the wells were carried ahead to the regular oil sands at 4700 feet and deeper.

On the same trend, Atlantic Refining Company abandoned the first of a series of Cockfield wildcats being drilled on geophysical prospects to the northeast of Sweden-Benavides district. Gravis 1, Section 88, topped the Jackson at 4370 feet and was carried to 5825 feet, finding only salt water sands.

A second producer has been completed in the newly discovered deeper sand of the Mirando Valley pool, Lapata County. Kirkwood and Morgan's Hinnant 1, diagonal northwest offset to the discovery, flowed about 8 barrels per hour from 1878½ feet. It found the discovery sand at 1861-70 feet, about 22 feet high, then went into a second lens at 1875-78½ feet.

Campbell and Killam were continuing to test Thompson 5, which is attempting to open Rosenberg sand oil production in the Killam-Oilton pool of Webb County. It is showing for a light producer at 2473-82 feet.

Two wild gas wells nearing end of damaging rampage

Mission.—Rio Grande Valley's two deep wild wells appeared to be nearing the end of their uncontrolled rampage which has cost many thousands of dollars in property damage and depletion of reserves. In the control of one a new precedent is being set in saving lost wells.

Davenport et al's Swallow 1-A, 7900-foot producer in the La Blanca field, Hidalgo County, blew out January 8 and caused a nearby junked hole to also blow out and crater. Both wells were engulfed in the crater and burned for weeks. The first was extinguished, only to ignite again. Finally the cratering hole was killed, valves and other equipment set atop the first wild well, and now it is flowing through separators into the tanks.

Outposts make Fairbanks look like major oil field.

* * *

Eureka prospect wildcat logs 33 feet of oil sand.

Houston.—Fairbanks is taking on the appearance of a major oil field. At the end of the week H. E. Williams Vega 1, 5900 feet southeast of the discovery well and approximately 4000 feet south of Owenby Drilling Company's Myers 1, G. Williams Survey, Harris County, was classed as the best oil producer completed in the field. It came in flowing an estimated 25 to 30 barrels per hour through a quarter-inch choke with a tubing pressure of 650 pounds and a casing pressure of 850 pounds. Casing was perforated from 6822 to 6834 feet. The hole was drilled to 6835 feet in sand showing oil. Top of the broken formation was logged at 6817 feet. Casing was set to bottom.

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
AMELIA—		
Humble, Straughan 1	623	6718
ANAHUAC—		
Humble, Grippon 15	590	7120
Shaver 2	107	7134
BRYAN MOUND—		
Texas Co., Freeport Sulphur Co. 4..	*	3900
CALL—		
Houston Oil Co., Sabine Tram 3...	*	7122
CLINTON—		
Stanolind, Barraco 1	408	3818
DICKINSON—		
Humble, Overton 1	720	8867
Peters 2	*	8600
Pure, Otterside 2	448	8100
FAIRBANKS—		
Owenby Drilling Co., Myers 1.....	96	6852
FANNETT—		
Gulf, Thomas 14	253	4148
FIVE CORNERS—		
Texas Co., Pierce Estate B-14.....	267	5548
FRIENDSWOOD—		
Humble, J. B. Merry 1	578	6049
Moore 1	552	6043
Whitcomb 1	584	6049
HARDIN—		
Arkansas Fuel Co., Green 1.....	586	7618
Jack Frazier, Buffam Benning 1....	*	7475
Gulf, Barfield A-1	516	7624
L. W. Wicks, Tullos 2	625	7620
HASTINGS—		
C. Andrade, Blumer 1	626	6108
Humble, Hadin 11	552	6080
HITCHCOCK—		
N. W. Hunter, Stewart 2.....	*	5357
MANVEL—		
C. P. Burton, Stone 1	423	4068
Sam Wilson, Gambell 2	420	4069
NORTH CHEEK—		
Magnolia, Phelan 3-A	*	9007
THOMPSON—		
Humble, Lockwood Sharp 23 B-X..	408	3147
TOMBALL—		
Humble, Weindorf 3	¶2¼	5561
WEST COLUMBIA—		
Mike Hogg, Varner 1	260	3390
WILSON CREEK—		
United North & South Dev. Co., Lambert 1, dr to 10,503 ft, pb and comp 7900 ft	75	7900
WITHERS—		
Cockburn & Hargrove, Britton 1...	360	5549

*Failures; †Junked; ¶Million cu. ft. gas.

Northeast of the discovery well at Fairbanks, Owenby Drilling Company's Myers 1, Geo. Ayers Survey, was completed last week flowing 58 barrels of 38.5 gravity oil in 16 hours through a ⅛-inch choke. Tubing pressure was 1960 pounds and casing pressure was 2520 pounds. Myers 1 was completed after casing was perforated with 24 holes from 6833 to 6841 feet and 24 holes from 6844 to 6852 feet. Casing was set at bottom at 6858 feet.

Outpost Logs Oil and Gas Sands

Approximately 8000 feet east of the discovery well at Fairbanks, Amerada Petroleum Corporation and Stanolind Oil & Gas Company logged oil and gas sands in White 1, J. Clarkson Survey, and were running an electrical logging device before setting casing. White 1 logged 15 feet of gas and distillate sands from 6790 to 6810 feet; 10 feet of sand showing oil from 6810 to 6830 feet; eight feet of sand showing oil from 6830 to 6845 feet; 11 feet of sand showing oil and gas from 6845 to 6860 feet; shaly sand with no shows from 6860 to 6880 feet; salt water sand from 6880 to 6881 feet, and shale at 6895 feet, bottom of the hole.

Another oil field within the shadows of Houston city limits was reported in Jack Frazier's Vollmer 1, Eureka, J. Rienerman Survey, Harris County. The well is about 2000 feet northwest of the city limits and is between 11th and 19th streets.

It logged 33 feet of oil sand and 6⅝-inch casing was set at 7730 feet, the bottom of the hole. Sand showing oil was logged at 7690 to 7723 feet. A production test will be made soon.

Heretofore, Eureka has been a gas and distillate field. No wells have tested the lower section of the producing horizon. Houston Oil Company's Lackner 1, a gas well, is southeast of the potential oil discovery.

Pearland a Mystery

Albert Plummer's Street 1, Pearland prospect, Hunter Survey, has created considerable excitement among Gulf Coast operators. Last week this excitement ceased when reports were circulated that the well logged salt water sand in Frio formation. Other unconfirmed reports stated that the well has been abandoned at or below 6500 feet in salt water sand. Street 1 has been drilled as a "tight" well and very little information has been given out. While the wildcat was drilling reports stated that it was running high and had encountered some shows of oil.

On the Genoa prospect, Harris County, West Production Company announced location for Sowden 1, 466 feet north and 660 feet west of the southeast corner of the south tract, or 2250 feet north of the south line and 8800 feet east of the west line of the J. Lindsey Survey, Abstract 43.

The first good producer at Clinton, Harris County, was making 408 barrels of 22 gravity pipe line oil daily. Stanolind Oil & Gas Company's Barraco 1 was completed at 3818 feet in sand showing oil. The well is flowing through a quarter-inch choke with a tubing pressure of 380 pounds and a casing pressure of 430 pounds.

Withers Extended

Withers field was extended towards Blue Basin last week. H. C. Cockburn & T. Hargrove's Britton 1, half mile southwest of production at Withers was completed flowing an estimated 15 barrels of oil per hour through a quarter-inch choke. Tubing pressure was 250 pounds and casing pressure was 300 pounds. Britton 1 was drilled to 5549 feet in sand showing oil and 5½-inch casing was set at 5549 feet. Sand showing oil and gas was logged from 5501 to 5549 feet.

Withers, Magnet, Five Corners and Blue Basin, Wharton County, if all classed together as one field, would be one of the largest in the Gulf Coast. All the fields have been classed as individuals but development is making them meet each other.

The Texas Company completed Pierce Estate B-14, J. Caldwell Survey, near the Withers field and in the Five Corners field, Wharton County, last week making 267 barrels of pipe line oil daily through a quarter-inch choke. Oil sand was logged at 5528 feet and 5½-inch casing was set at 5542 feet.

Humble Oil & Refining Company is starting to complete more wells in Miocene formation at Thompson, Ft. Bend County. Last week the operators completed Lockwood Sharp B-X-23, J. Rabb Survey, at 3147 feet making 17 barrels per hour through a quarter-inch choke. Top of the sand was logged at 3132 feet. The company has made over a half dozen locations in this field to be drilled to Miocene sands.

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CHARENTON—		
Pan American, Veeder 3	250	1893
CHOCTAW—		
Louisiana Crusader, Schwing 1....	*	8969
DARROW—		
Humble, Gumble 13	700	6954
GIBSON—		
Shell, Realty Operators B-4	984	9502
SORRENTO—		
Sorrento Oil Co., White 1	*	4165
SWEET LAKE—		
Pure, Yount Lee 13 (wo)	¶1¼	6562
WEST HACKBERRY—		
Stanolind, Duhon 8	150	3244
WHITE CASTLE—		
Shell, White Castle Shingle 6	670	6449
ST. MARTIN PARISH—		
Carter, Stewart et al, Martin 2, Section 28 dome, 32-9s-7e	*	4526
Texas Co., State 4, Lake Mongouloi prospect, 14-10s-9e	*	7988
ST. MARY PARISH—		
Petroleum Heat & Power Co., D. Parro 1, nw of Charenton, 9-13s-9e	*	3009

*Failures; †Junked; ¶Million cu. ft. gas.

SOUTH LOUISIANA

East Baton Rouge wildcat promises new field.

* * *

Second test in off-shore field nearer land.

Lake Charles.—Prospects of a new oil field at Louisiana State University, Section 65-7s-1w, East Baton Rouge Parish, looked bright last week when Austin B. Taylor (Louisiana Crusader Oil Company) cored oil sand in Duplantier 1 and set 7-inch casing for a production test.

Duplantier 1 drilled and cored to 6477 feet in sand showing oil, logged at 6465 feet. Casing was set at 6471 feet. An electrical device showed from 6 to 11 ohms resistance and around 125 milivolts porosity.

The University Block is an old prospect of Superior Oil Company. The area was worked with geophysical instruments and Superior drilled a 10,000-foot well in the district. The hole was plugged back and several tests were made in the 6000-7000-foot horizon. Some of the tests showed oil. After drilling the dry hole the operators dropped part of the acreage and Louisiana Crusader Oil Company picked up the leases. It drilled one dry hole before moving to Duplantier 1, which is 400 feet south of the 10,000-foot dry hole.

Superior Oil Company which has been very successful with discovering flank production around old proven salt domes has evidently discovered a new sand at West Hackberry, Cameron Parish. The company's Benson-Vincent 1, Section 30-12s-10w, 2 miles southwest of the present production, blew out last week at 6224 feet. Pipe was stuck and fishing was in progress.

Superior Oil Company last week opened the first oil field in the Gulf of Mexico. In partnership with Pure Oil Company, the company brought in State 1, over a mile offshore of Cameron Parish, flowing at the rate of 10 barrels of 33.9 gravity oil per hour through a 7/64-inch choke from Miocene sands at 5130 feet. Tubing pressure was 550 pounds. The well flowed pipe line oil and then was shut in. Tubing was being pulled to set screen and liner for another test at the end of the week.

Superior Oil Company has made location for John Sells 1, approximately 1½ miles north of the discovery well in the Gulf of Mexico. Sells 1 is 1320 feet south and 600 feet east of the center of Section 5-15s-8w.

Lafitte, Jefferson Parish, was extended northeast last week by The Texas Company's Marrero 2, Section 21-17s-24e, flowing 1300 barrels of 36.6 gravity oil daily through a large choke from 10,095 feet. Casing was perforated from 10.065 to 10,095 feet with 90 holes. Bottom is at 10,187 feet. This is a new sand, other wells in this district being around 9600 feet.

The second well at Horseshoe Bayou is nearing the sand (10,850 feet) found in the discovery well. The Texas Company's St. Mary Land Company 1, Section 37-17s-9e, was coring sand with oil odor at 10,645 to 10,695 feet.

In the Haynes area, Calcasieu Parish, Shell Petroleum Corporation's Calcasieu National Bank 1, Section 18-11s-5w, abandoned after logging salt water sands at 9040 to bottom at 9073 feet.

All deep drilling records may be broken in South Louisiana by Amerada Petroleum Corporation and Stanolind Oil & Gas Company's Calcasieu National Bank 3-B, South Elton area, Section 27-7s-3w, Jefferson Davis Parish. It is planned to carry the well to 14,000 feet or deeper. At the end of the week it was down to 12,000 feet and was drilling. When the well passes the 12,216-foot mark it will be the deepest well drilled in the Texas or Louisiana Gulf Coast.

Every precaution is being taken on the well. The last string of casing was 9⅝-inch at 8647 feet. The hole is in good condition below that mark. At the present rate of drilling it is believed that the 12,500-foot mark will be passed the coming week.

Magnolia Petroleum Company has made location on the West Gueydan prospect in Vermilion Parish. J. B. Ferguson 1 is 450 feet south and 460 feet east of the NWc E½ NE¼ NE¼ of Section 5-12s-2w.

At Abbeville, Vermilion Parish, Continental Oil Company has evidently missed the producing horizon in Mrs. E. Faulk 1, Section 66-12s-3e. Last week it was down to 8298 feet in shale and was coring.

A new oil sand may be discovered at Big Lake, Cameron Parish. Union Sulphur Company's Miami Corporation 2, Section 19-12s-8w, was coring in water sand last week at 8410 feet. Sands from 6760 to 6788 feet showed from 1 to 11 ohms and 120 milivolts on electrical test.

At Bayou Choctaw, Louisiana Crusader Oil Company abandoned Schwing 1, Section 29-8s-11e, Iberville Parish. The well was drilled to 8969 feet in oil sand logged at 8965 feet. The well tried to blow out and when it did the drill pipe was stuck. After cleaning the hole the 10¾-inch casing collapsed and the operators were forced to abandon. This well was in a new sand. Schwing 2 will be drilled 800 feet north and 500 feet west of the southeast corner of Section 29-8s-11e.

Field in Gulf Will Be Developed With Directional Holes

By CHARLES B. LEYENDECKER, Staff Writer

HISTORY is being made at Creole. Technique of finding oil approximately a mile below the ocean bed off the Gulf Coast has been mastered. Superior Oil Company and Pure Oil Company have proven that oil exists and can be developed in the open waters of the Gulf of Mexico. Their discovery a mile offshore of Cameron Parish, South Louisiana, will no doubt be the forerunner to more off-shore drilling.

Much has been written about geophysical work in the Gulf of Mexico and finding structures. Still more has been written about water development in South Louisiana. This is all history. Now, looking toward the future, how are oil fields in the open waters of the Gulf of Mexico going to be developed?

Superior Oil Company and Pure Oil Company propose to develop the field, one well to each 20 acres. Operators plan to drill six 20-acre tracts from one main project, the first of the six wells having already been completed as the discovery well. The remaining five holes will be deviated from the discovery well.

When the operators announced location in April, 1937, piling was moved in for the derrick foundation. Over 325 creosoted piles ranging from 60 to 70 feet were driven into the bed of the ocean. This work took nearly six months. After piling had been driven a platform approximately 311 feet long and 146 feet wide was laid on them. The derrick was constructed on the west side of the platform.

It is proposed, now after the discovery well has been brought in, that the derrick and equipment will be skidded 30 feet north or south to drill the second well. If it is skidded north then the third location will be 30 feet south of the discovery well. Whichever well is spudded first will be drilled and surface casing set. Following this routine procedure the hole then will be deviated either north or south and a hole drilled to the 5180-foot sand under each 20-acre pattern. An accompanying sketch shows the proposed wells and in what direction they will be drilled from the discovery well.

After the two wells are completed on the western end of the main project, the drilling equipment will be

moved to the eastern end of the platform. Wells on this side will be deviated east, northeast and southeast away from the discovery well.

After this project is through and 120 acres have been developed, it is believed that a new platform will be constructed and another six wells drilled or even more.

The present platform will be bolstered with additional piling and new derrick floors will be constructed. Ramps and pipe rack between will also receive additional piling.

Considerable money will be saved by this plan of development. It has been estimated that the initial derrick foundation or platform cost around $75,000. Hauling material and transportation was no small item.

To Build Pier

Another project which Superior Oil Company and Pure Oil Company will install at Creole is the construction of a landing or pier 3000 feet off shore whereby equipment can be carried out and then loaded on barges and carried to the well. The pier will extend 3000 feet to water 7 feet deep. This will save considerable time. Heretofore, the base of operation was at Cameron, a 10-mile trip by boat. With the new landing, water transportation will be around 2600 feet out to the main platform. It is shown in a plan included with this article the proposed new landing.

Plan Used in California

Directional and multiple drilling is not new for the oil industry. This practice has been used in the Pacific Ocean at Elwood, California, for some years. But it is new for the Gulf Coast and is different from the drilling at Elwood. The Elwood ocean drilling was the construction of one pier, 12 caissons and five cellars were used. These caissons were arranged in two rows of six, each caisson in each row having been in the right position to support a derrick corner. The arrangement was such that any running combination of four caissons in the two rows formed a square that would support the four derrick corners.

Two wells were drilled in the first or inside cellar, one well each in the second, third and fourth cellars, and two wells in the outside or oceanward cellar. After drilling the first well, it was necessary to skid the derrick only 18 inches to place it over the second well in the same cellar. The wells were actually located 18 inches apart, and the tops of the caissons provide for anchoring the derrick corners in the two positions. Two 26-inch conductors were driven vertically in the first cellar and one well was drilled in each conductor. It was possible to start the wells so that a deviation of as much as 1½ degrees could be carried from the surface, but the holes were started and drilled vertically through the conductors. After drilling the first two wells, the derrick was skidded to the next location, which was in the center of the next combination of four caissons.

Heretofore, marine drilling on the Gulf Coast has been with either sinkable barges or piling for one location. The large project of Superior Oil Company and Pure Oil Company is the first of its kind in the area. Considerable interest was shown in this well while derrick foundation was under way.

The operators were handicapped with work in the early stages due to swells and heavy oceans. Piling could not be driven into the bed. Work was done only when it was calm.

Drilling Site

When the crew could work, trouble was encountered due to the softness of the ocean floor. A base had to be located before the piling could be driven. The piling, when started into the floor of the ocean would sink by its own weight. Later a base was found just below the ooze in a stratum of hard clay.

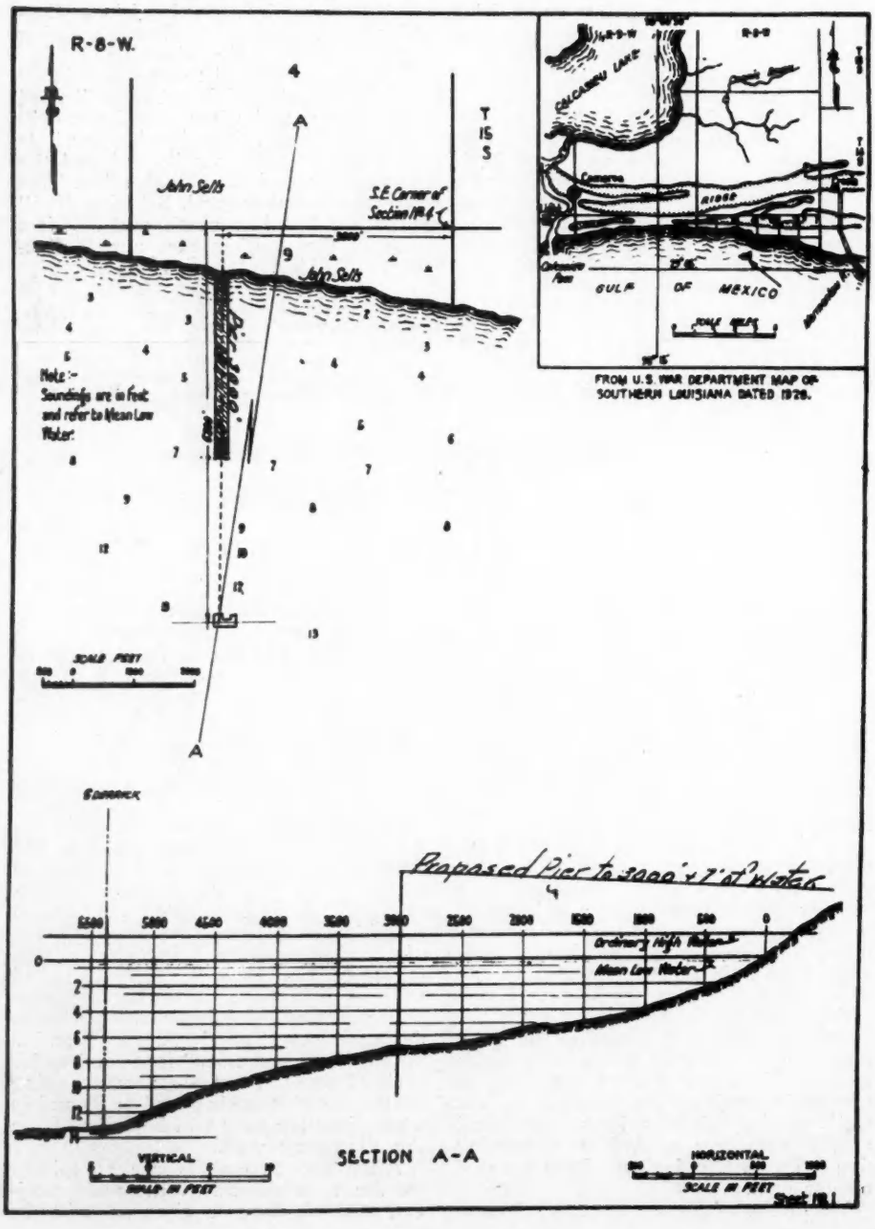
After piling was constructed for State 1 it was covered with 12 x 12 timbers, making a platform approximately 12 feet above mean low water level and about 10 feet above high tide. Below the platform was 14 feet of water.

A standard 136-foot steel derrick was constructed on a steel substructure. Two 350-horsepower Diesel engines drove 2 electric generators. One of the motors operated the draw works and the other the pumps. A 1200-ampere, 200-volt generator was provided for the pump motors. A 1000-ampere, 200-volt generator was used for the draw works. Two draw works were used. Electric motors operated the 9½-inch draw works and a gasoline motor furnishes power for the smaller auxiliary draw works.

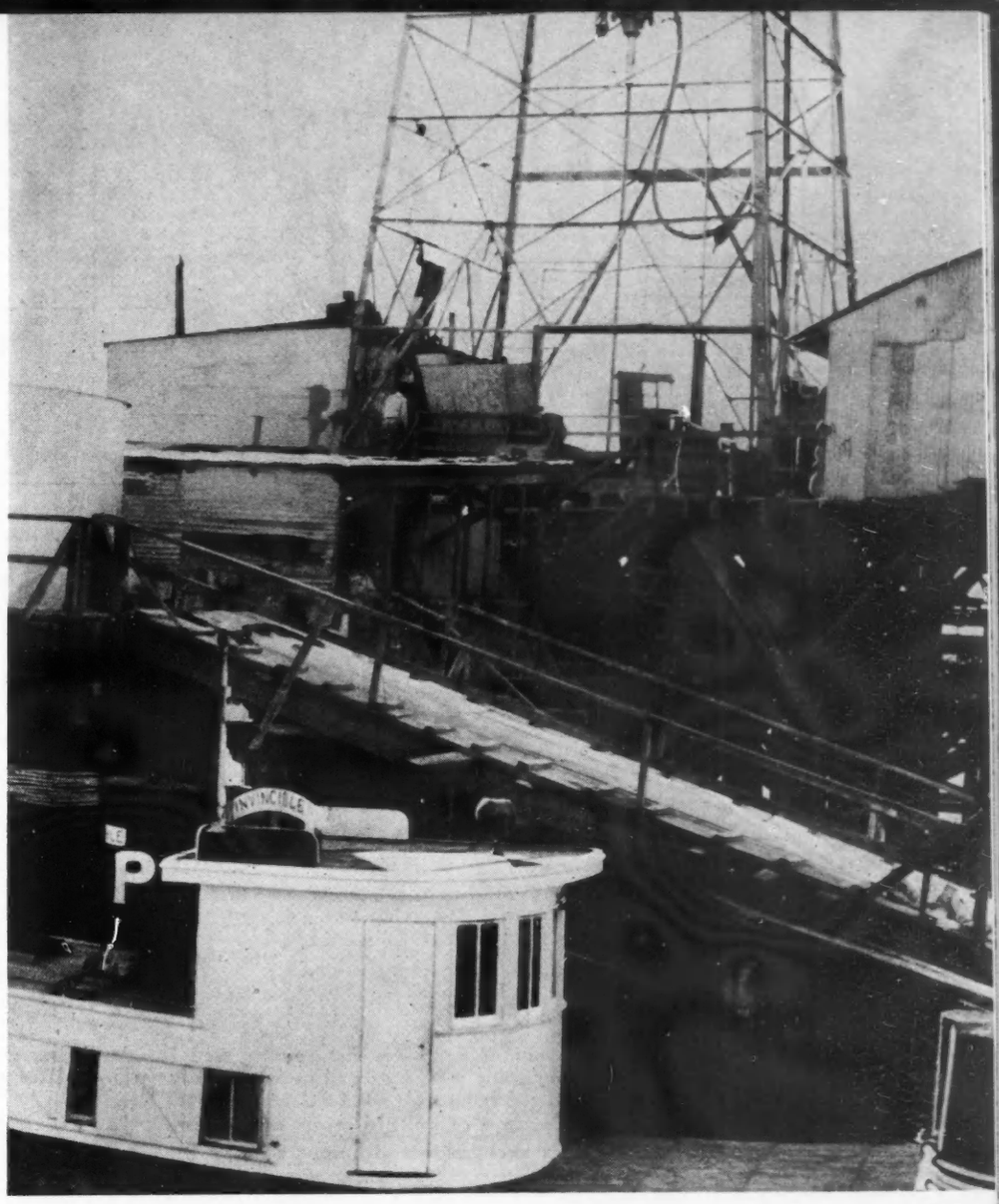
Included on the large platform were several 250-barrel tanks for mud pits. Two 500-barrel tanks were used for water and fuel.

All precautions were taken on the derrick floor against high winds. Tanks, derrick and other equipment was strapped to the platform, which could stand a 100-mile hurricane.

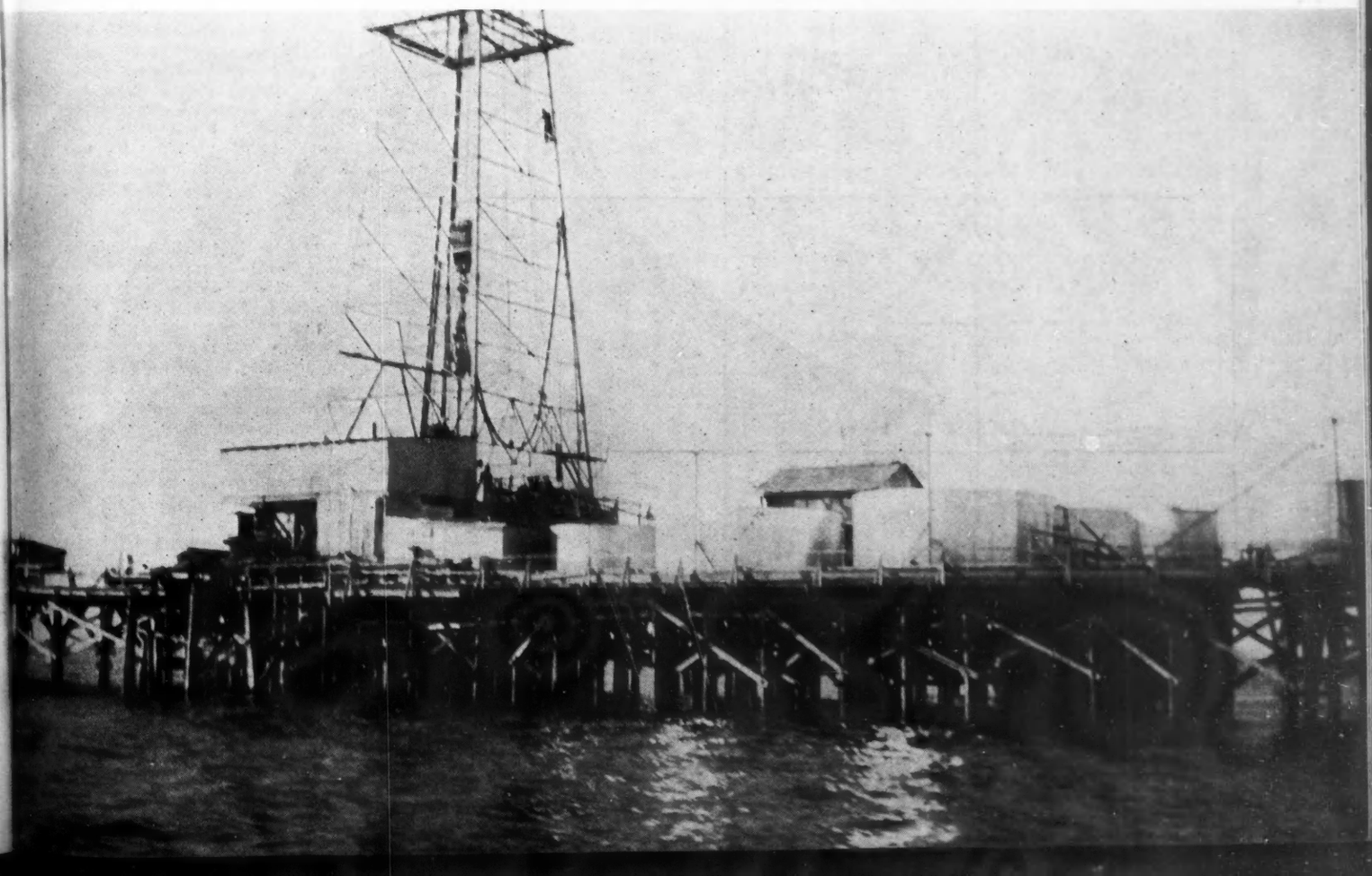
State 1 was spudded in October 6,

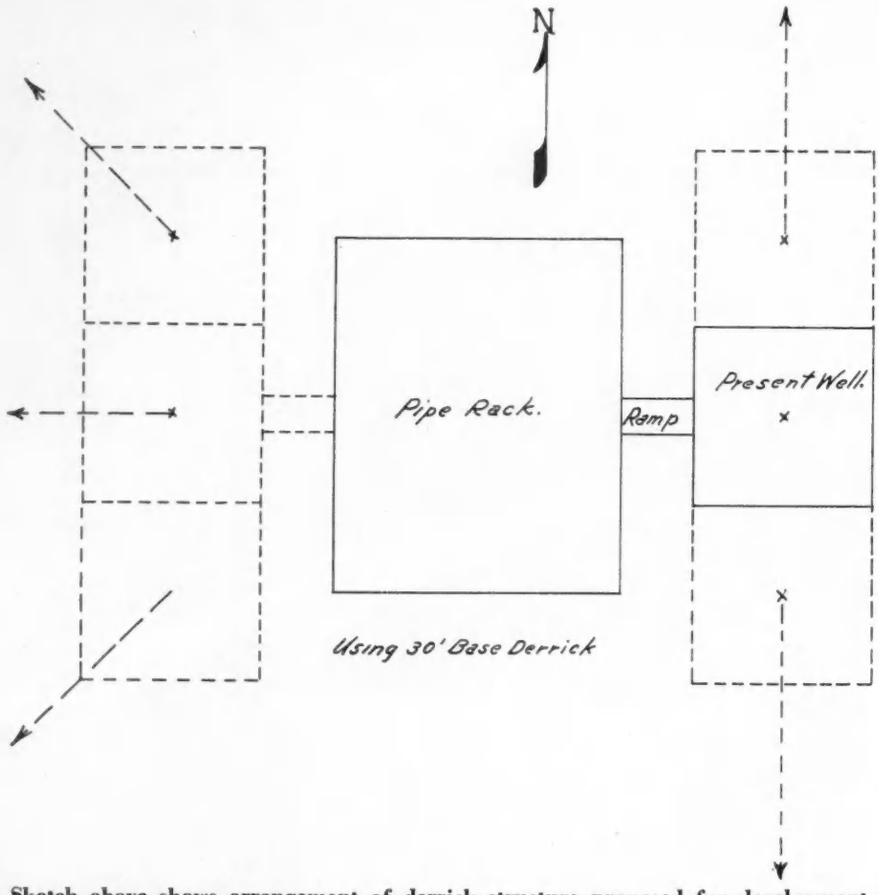


Sketch map of off-shore operation, showing how Superior-Pure will shorten distance by erection of a pier.



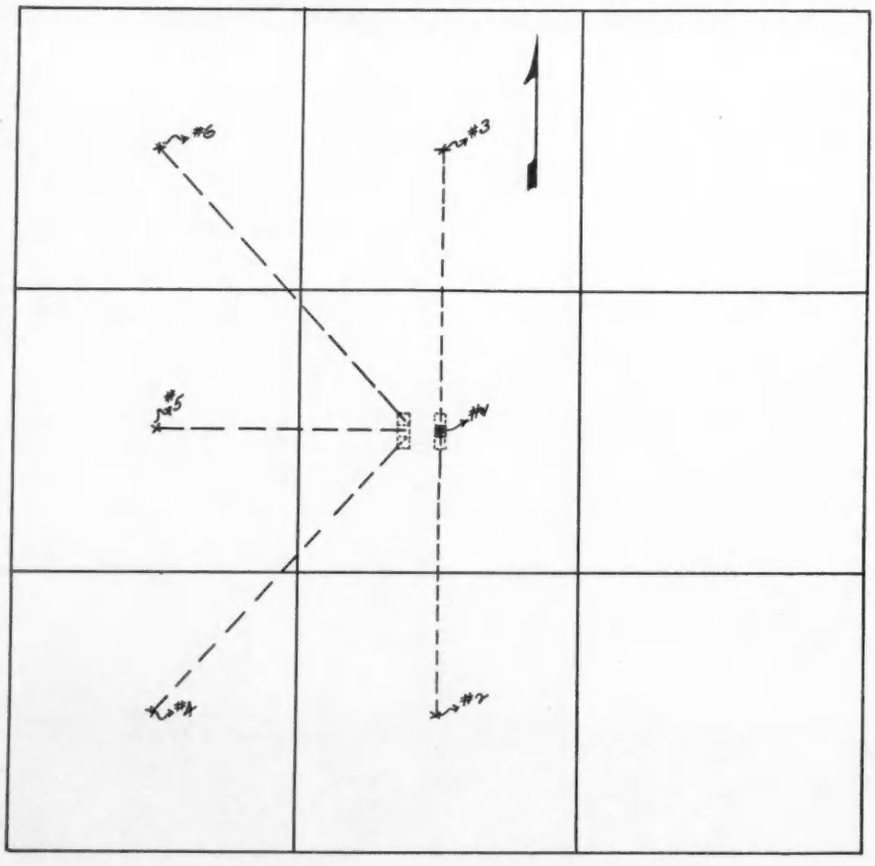
Superior Oil Company and Pure Oil Company's State 1 was drilled a mile from shore off Cameron Parish, in 14 feet of water. The pictures show piling and platform from which the discovery well was drilled and which will be used for more drilling, as is shown on sketch on the following page.





Sketch above shows arrangement of derrick structure proposed for development in the Gulf of Mexico, whereby wells will be spaced in 20-acre squares by shifting the derrick only 30 feet.

Lower sketch shows pattern of wells in center of 20-acre blocks
The two sketches are different scale



1937 and 24-inch conductor pipe was driven into the ocean bed. A string of 10¾-inch casing was set at 1157 feet. Every precaution was taken against blowouts and pollution. A sand was encountered at 5110 to 5182 feet. An electrical logging device showed a maximum of 10 ohms resistance. Side wall samples were taken at 5155 feet and showed saturation. The hole was carried deeper and several broken formations showing oil were logged at 6700 feet, 7383 feet, and 7464 feet. A string of 7⅝-inch casing was set at 7166 feet. After drilling to 9324 feet a gas sand was encountered. Some are of the opinion that this was heaving shale. Stuck drill pipe forced a plug-back to 6000 feet.

Flows 10 Barrels Hour

On March 11, a production test brought in the first well in the open waters of the Gulf of Mexico. It is also believed to be the farthest well off shore in open seas. Casing perforated from 5110 to 5118 feet with 12 shots and from 5118 to 5130 feet with 24 shots. The well came in flowing an estimated rate of 10 barrels of 33.9 gravity oil per hour through a 7/64-inch choke with a tubing pressure of 550 pounds. Later it was shut in for storage. It was killed and tubing was pulled. Screen and liner will be run for another production test after additional storage has been constructed.

Superior Oil Company and Pure Oil Company own around 50,000 acres in this area. Part was taken from the state and the rest from Southern Oil Company. Southern Oil Company has drilled two dry holes in the area, one with the help of the discoverers of the new field. Present owners shot the district with reflection seismograph in 1933 and 1934 and combined the two pictures and went into partnership on a 50-50 basis. The companies leased acreage out to the four-mile limit, which probably will bring up international law.

The possibilities of the new Creole field looks bright and it may extend out to the or beyond the four-mile limit. Surveys of the depth of water at four miles shows that wells can be drilled.

"What nation owns the oil rights under waters lying more than three miles beyond the nation's shore line?" Now that production has been established a little better than one mile off shore in the Gulf of Mexico and it is feasible to believe that if Creole is any type of field at all it should at least extend two miles farther out who will own the oil? If it is a major strike then probably it will go four miles out into the open waters.

This probably will be brought to the attention of Senator Nye who introduced a resolution instructing the attorney general to move, by suit or otherwise, to establish the title of the United States to the California "offshore" oil lands and remove and eject persons now occupying them or removing the petroleum deposits therefrom. The measure was passed by the Senate, August 19, last. This resolution caused considerable excitement among representatives of three Gulf states, having possible oil fields under their offshore waters. They gathered in Washington last month for a series of hearings before the House Judiciary Committee.

NORTH LOUISIANA

Cotton Valley well has 25 feet of Travis Peak.

* * *

West Zwolle well responding to acid treatment.

Shreveport.—The Travis Peak (Holloway sand) in the Cotton Valley field, Webster Parish, which has been found to be lenticular in that field, where uniform gas-distillate production, however, is found in the lower Marine (Bodcaw) below 8000 feet, added its seventh producer last week. Only 6 wells are producing there, however, as one that was small in volume in the Travis Peak is being deepened.

The new well is A. G. Oliphant's Central Trading Company 1, NE SE 33-21n-10w, on the southwest side of the field, which was completed for 621 barrels in 24 hours flowing through ½-inch tubing choke with 225 pounds tubing pressure and 875 pounds casing pressure. Total depth is 5905 feet and this well logged the greatest amount of saturation in the Travis Peak so far in the field, from 5862 to 5887 feet. The gas/oil ratio was 800 to 1. The volume of the well was somewhat disappointing in view of the great amount of saturation logged.

The per-well allowable for Travis Peak wells at Cotton Valley is 300 barrels daily. However, it is likely that a new allowable scale based on bottom-hole pressure and acreage will be issued soon by the Louisiana Conservation Commission.

After indicating an oil well of 3000 to 5000 barrels daily on first bailing last week, Sutton-Zwolle Oil Company and associates' Sabine Lumber Company 1, SE NW NE 23-7n-14w, Sabine Parish, which logged 12 feet of saturation in the Washita from 3841 to 3853 feet. was killed with water so bottom of hole could be cleaned, after flowing more than 24 hours without having thoroughly cleaned itself. Operators then started swabbing but the well would not flow steadily but headed intermittently. On Thursday, March 17, it was treated with 750 gallons of acid to test adaptability of acid to the formation, and plans were to treat with 3000 gallons unless it could be swabbed in, as the preliminary treatment was satisfactory. The last time swab was run before shutting down for acid treatment the pressure sent the swab to the crown block. This test had shown 1200 feet of oil in a 9-minute drill-stem test before 7-inch casing was cemented at 3840 feet. It would open the Washita as a new producing horizon for the West Zwolle (Blue Lake) district where five shallow producers completed in 1928 and 1929 were later abandoned. Leasing has been active west of this test since oil first showed in drill stem test, the leasing extending across the Texas line into Shelby County.

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO PARISH (Pine Island)—		
L. T. Davis, Stiles 3, 17-21n-16w..	25	1021
Louisiana O. P. Co., Muslow D-4, 5-20n-15w	140	2196
CLAIBORNE PARISH (Lisbon)—		
Scout Oil Corp., Bean 2, 32-21n-4w.	960	5177
LINCOLN PARISH (Lisbon)—		
Murray R. Hart, Patton Est. 1, 7-20n-4w	1680	5307
SABINE PARISH (Zwolle)		
Major Oil Co., Henry 1, 12-7n-13w..	222	2547
WEBSTER PARISH (Cotton Valley)—		
A. G. Oliphant, Central Trading Co. 1, 33-21n-10w	621	5905

*Failures; †Junked; ¶Million cu. ft. gas.

Magnolia Petroleum Company's Frank Sexton 1, C SW NE 32-23n-9w, deep test in the Shongaloo shallow field, Webster Parish, was drilling below 8339 feet last week after getting a slight showing of gas at 8300 feet in lower Marine which was topped at 7605 feet. The showing was not large enough to warrant running formation tester.

Gulf Refining Company's Goodpine 1, SE SW 25-14n-8w, Bienville Parish wildcat, was drilling at 9045 feet in red and black shale with streaks of gray sand, being one of the few North Louisiana tests to go to 9000 feet. Only two North Louisiana tests have ever gone to 10,000 feet.

The last week's list of new locations included three interesting wildcat tests, one on the south edge of the Sabine Uplift and two south of it. In Natchitoches Parish near Robeline, Walter T. Ryan of New Orleans, is rigging for Lambert 1, located 1500 feet east and 150 feet south NWc 4-8n-9w. In Grant Parish, between the Sabine Uplift and the Conroe trend, C. R. Bowers made location for O. P. Harrison 1, NE SW 21-8n-5w, for a 3000-foot test on a 3200-acre block. In Rapides Parish, J. J. Ferrell and associates of Houston, Texas, have derrick up for a test in SW SW 16-4n-1e, which will go to the Wilcox.

Hunter & Rowe's E. M. Clark 1, Section 10-20n-7e, Morehouse Parish wildcat, is drilling at 6640 feet in black shale. Joe Modisett and Standard Oil Company of Louisiana's Frost Lumber Company 1, NE SW 14-21n-1e, Union Parish, was drilling at 7982 feet. Standard and associates' Brownfield 2, C SE

That Boy Scout Feelin'

Business is business. But all wives must have new hats and all kids must have shoes and Uncle Sam demands his pound of flesh impartially. So it doesn't hurt to live and let live. When we go home at night to look over the paper while the kids drift out and the wife turns down the covers, we enjoy that Boy Scout feelin' if it so happens we've been helpful to our customers that day. It gives us comfortable assurance that some of 'em will be back — even though some of 'em have been doing just that, in spite of everything, for 30 years!

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SHREVEPORT LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe
Cotton Valley—Greggton
Houston

NW 5-19n-5w, deep test in the Sugar Creek field, Claiborne Parish, which plugged back from 9964 feet to straighten crooked hole, is drilling below 9233 feet.

Standard Oil Company of Louisiana is ready to make location for a proposed deep test in the Schuler trend, on a block it has held for some time in Union Parish, Louisiana. The test will be drilled in C SW SW 13-23n-2w. It will be the first deep test to be spudded on the Louisiana side of the trend since Buckner and Schuler in Arkansas were found productive of oil in Permian lime.

Location for a 5700-foot test southeast of the shallow Converse field, Sabine Parish, was made last week by W. L. McClanahan at Frost-Johnson 1, near C 22-9n-13w. This operator has a block of 1600 acres surrounding this location, the block having been assembled by A. C. Scott, who drilled a test to 3077 feet in Section 23-9n-13w, that showed oil at 3077 feet. Location for the 5700-foot test is about midway between Whitehurst and associates' Whitney Corporation 1, Section 8-9n-13w, that showed oil and gas at 5300-5500 feet, and R. L. Gay's Long-Bell 1, Section 10-8n-13w, that had a showing of oil at 4775 feet, and later deepened to 7154 feet.

W. R. Sherry of Tulsa has taken an option on a block of 2000 acres around Section 24-19n-6w, Claiborne Parish. In township 22 north, range 5 east, Morehouse Parish, Ohio Oil Company has a shooting unit and Union Producing Company has a crew engaged in similar work in township 20 north, range 7, east. Kerr-Lynn Oil Company has a seismic unit working in township 2[illegible] north, range 3 west, Union Parish, and Atlantic Refining Company has a seismograph unit working in the same parish in township 21 north, range 1 east.

Texas Canadian Oil Company has bought SW NW 33-21n-4w, Claiborne Parish, which has one producer on the east edge of the Lisbon field.

The recently opened south nose of the Dolet Hills part of the old Bull Bayou field, DeSoto Parish, on March 1 had three wells on the beam making a combined daily yield of 110 barrels, had one well flowing 108 barrels of 43.6 gravity oil, three tests drilling and two which missed the Tokio producing horizon were shut down. Total cumulative production from this new nose to March 1 was 4100 barrels of oil.

Shreveport.—The first salt dome discovered on the Conroe trend in Louisiana is at Cheneyville, Rapides Parish. Amerada Petroleum Corporation's Weil 1, Section 53-1s-2e, drilled to 7045 feet in salt after logging top of the formation at 6848 feet. It is plugging back to 6724 feet where 6⅝-inch casing will be set. Tests probably will be made from 6703 to 6728 feet.

Cheneyville is the first field in Louisiana to produce from the Cockfield formation. It is now the first salt dome on the trend and is one of the few such salt domes along the trend in Texas and Louisiana. Cheneyville is also the farthest north salt dome in the district.

Standard has Permian show in second test at Buckner.

* * *

Kerr-Lynn well reworking to shut off salt water flow.

El Dorado, Ark.—Indications of a second oil well from the Permian lime at Buckner, Columbia County, Arkansas, were given last week in Standard Oil Company of Louisiana's S. T. Crone 1, C NW SE 8-16-22, one-half mile northeast of the same company's J. P. McKean 1, SW SW 8-16-22, discovery well and lone producer in that field.

Standard's S. T. Crone 1, with elevation of 271 feet, logged top of Permian lime at 7264 feet, and cored saturated lime to 7272 feet. When formation tester was run from 7225 to 7272 feet, the well showed 600 feet of oil and 60 feet of oil and mud, in 20 minutes with ¼-inch chokes at top and bottom. Electrical logging device was then run and preparations made to set final casing string. The discovery well was 53 feet higher on top of the saturation than present test. It has been producing about 500 barrels daily since completion last November 30.

Another interesting development in Columbia County last week was a showing of oil when formation tester was run in Standard's W. P. Phillips 1, SE SE 15-17-19, geophysical prospect test near Village, which showed 105 feet of mud cut with oil when formation tester was run from 4616 to 4650 feet in red beds of the Travis Peak, with ⅜-inch choke used at top and bottom in a 20-minute test. The test is drilling ahead for the Permian lime.

Kerr-Lynn Oil Company's Barnett 1, SE SW E 14-17-20, Columbia County, about midway between Buckner and Schuler, was given a set-back last week when salt water, blamed to a leak in casing, appeared. Operators were running tubing with packer for another test. This well, although it had shown 5400 feet of salt water in a drill-stem test previously, had cemented 5½-inch casing at 7720 feet after 7-inch was set where it hung at 7051 feet. The salt water is believed coming in between these strings of casing. When the 5½-inch casing was perforated from 7623 to 7651 feet with 34 shots, the well flowed for half an hour and then was shut in awaiting erection of storage. When the well was opened it flowed for several hours and then ceased to flow. It was while bailing in an attempt to revive it that the salt water appeared. Total depth is 7740 feet.

Standard of Louisiana has made two new locations in the Buckner field, Columbia County. It is also unitizing into 40-acre units, its block around the test at Village in Section 15-17-19. In Ashley County, Ohio Oil Company has a torsion balance unit working in township 19, range 5. Two miles southeast of the Kerr-Lynn well, before it showed the water during bailing, Standard of Louisiana has bought 163 acres in Section 19-17-19. The same company leased E½ SE SW 24-17-20, and W½ NE 21-17-20. In the same county, Standard of Louisiana, Shell Petroleum Corporation, The Texas Company and others are leasing around a reported shooting "high" in Section 18-18-22. In the same county, in township 15, range 21, R. E. Wyche, Jr., has been leasing, where a recent leasing campaign was conducted by several companies. Sun Oil Company has been leasing in township 16, range 21, and Amerada Petroleum Corporation has a seismic unit working in township 15, range 22. Across the line in LaFayette County, Shell Petroleum Corporation has a shooting unit in township 14, range 20, in the same general area where Standard of Louisiana has a similar unit.

Lyons and Neely of Shreveport leased S½ SW SW 23-18-17, and north 9 acres NW NW 26-18-17, at Schuler, Union County, and Fred Wall, for a major company in the same area leased W½ NW 24-18-17. Northwest of Schuler and south of Mount Holly, Wall leased over 1000 acres in Sections 13 to 35-17-18, where H. L. Hunt also took a few leases. Andrew V. Erwin is leasing in townships 17 and 18, range 14, Union County, and Grimes Brothers have assembled a block around Section 5-18-14, for a proposed deep test.

Two additional locations were announced Thursday for the Buckner district, Columbia County, Arkansas, both by Standard Oil Company of Louisiana, as follows: S. T. Crone 2, SE SW 8-16-22, and J. P. McKean 2, NW SW 8-16-22, the former being an offset to a test showing for a producer and the latter, an offset to the discovery well at Buckner.

ARKANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MILLER COUNTY (Rodessa)—		
Freda Lasse Layton, McKellar A-1, 15-20-28	350	6065
UNION COUNTY (Schuler)—		
Lion O. R. Co., Edna Morgan B-5, 18-18-17	700	7625

*Failures; †Junked; ¶Million cu. ft. gas.

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Geophysics

[*Continued from page 16*]

through the surface with the possibility that evidence of the escape still remained in the soil.

Dr. Rosaire called attention to the search for gas seepage, which was the clue for finding the earlier salt dome fields and pointed out that in soil-gas analysis, science has adopted another method of determining gas seepage, although it may not be sufficient to cause bubbling in water as was the case at Spindle Top and other fields.

The program for the meeting of the geophysicists was confined to two days, March 15 and 16. It consisted of:

"Electrical Prospecting with Non-sinusoidal Alternating Currents," S. S. West, Subterrex, Houston.

"Continuous Electrical Profiling," J. J. Jakosky, International Geophysics, Inc., Los Angeles.

"Transients in Electrical Prospecting," Paul F. Hawley, Western Geophysical, Los Angeles.

"Depth Factors and Resolving Power of Electrical Measurements," H. M. Evjen, Shell Petroleum Corporation, Houston, read by title.

"Determination of Potential Productivity of Oil Bearing Formations by Resistivity Measurements," G. H. Murray, M. Martin and W. J. Gillingham, Schlumberger Corporation, Houston.

"The Steady State Response of Electro-magnetically-damped Dynamic and Reluctance Type Seismometers," Daniel Silverman, Western Geophysical Company, Los Angeles, read by title.

"A Problem in Seismic Depth Calculation," Roland F. Beers, Geotechnical Corporation, Dallas.

"The Energy and Amplitude of Reflected Seismic Waves," Raymond T. Cloud, Western Geophysical Company, Los Angeles.

"Velocity-Depth Determinations from Velocity Profiles," Cecil H. Green, T. N. Walsh and Barney Fisher, Geophysical Service, Inc., Dallas.

"On Seismic Paths and Velocity-Time Relations," Morton Scott-Smith, Independent Exploration Company, Houston.

"Three Dimensional Reflection Control," S. M. Rock, Rieber Laboratory, Los Angeles.

"Steady State Polar Sensitivity Curves," Curtis H. Johnson, Rieber Laboratory, Los Angeles.

"Adjustment of Misclosures," L. G. Cowles, The Texas Company, Houston.

"Vertical Gradient of Gravity," Maurice Ewing and A. J. Hoskinson, Lehigh University, Bethlehem, Penn.

"Gravity Difference Benchmarks for Gravimeter Calibration and Control Thereof," E. A. Echhardt, Gulf Research and Development Corporation, Pittsburgh.

"An Introduction to the Second Derivative Contour Method of Interpreting Torsion Balance Data," H. Klaus, Klaus Exploration Company, Enid.

"Chart for Dip Computations," Reed Lawlor, Rieber Laboratory, Los Angeles.

"A Reaction Type Steady State Shaking Table," Dunford Kelly, Western Geophysical Company, Los Angeles.

"Further Development in Laboratory Orientation of Well Cores by Their Magnetic Polarity," E. D. Lynton, Standard Oil Company of California, Los Angeles.

"Maximum Electromagnetic Damping of Reluctance Seismometer," Neil R. Sparks and Paul F. Hawley, Western Geophysical Company, Los Angeles.

"Present Status and Future Aspects of Geophysical Prospecting in Poland," Z. A. Mitera, Lwow, Poland.

"A Seismic Survey in the South of England," George C. McGhee, National Geophysical Company, Dallas.

"The Reflection of Longitudinal Wave Pulses from Plane Parallel Plates," Morris Muskat, Gulf Research and Development Corporation, Pittsburgh.

"Shallow Stratigraphic Variations Over Gulf Coast Structures," E. E. Rosaire, Subterrex, Houston.

"The Status of Geophysics in a Department of Geology," King M. Hubbert, Columbia University, New York.

"Ocean Bottom Core Apparatus and Results from Some Cores," C. S. Piggott, Carnegie Institution, Washington.

Titusville Townsite test to drill

A suit which held up drilling of a proposed well within the city limits of Titusville, Pennsylvania, about a half mile from the original discovery well of Col. Drake, was settled March 15. George W. Sterling on January 31 obtained a temporary injunction against Walter Ohl to prevent him from drilling a well in the residential district of Titusville, near Sterling's home.

The action brought considerable controversy in the city, and following protests entered by a delegation of oil drillers, the city council tabled a proposed ordinance prohibiting drilling within the city. The action left Ohl free to start operations, but the well site will be at a more distant point from the Sterling home than previously planned.

Michigan gas rates

Governor Frank Murphy of Michigan announced he would confer with the state public utilities commission this week in an effort to speed up investigations of natural gas rates, specifically mentioning the Detroit and Ann Arbor situations.

Pawhuska.—Public auction of Osage Indian lands will be held here March 29. There will be 94 tracts offered, comprising 14,786.87 acres. The sale will be held in the Osage auditorium on the agency campus. Announcement was made by C. L. Ellis, superintendent.

EASTERN FIELDS
Completions
OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ASHLAND COUNTY—		
Mehowa O & G Co., Burnsides 2..	¶1.15	2752
ATHENS COUNTY—		
Kachelmacher Est, Jackson 1.....	¶.25	926
GUERNSEY COUNTY—		
Jewell O & G Co., McCann 1.....	¶.45	1325
Flannery et al, Smith 1.....	¶.09	1190
KNOX COUNTY—		
Clairmont O & G Co., Rice 1.....	¶	2850
LICKING COUNTY—		
Settles Oil Co., Shannon 4.....	10	740
Armbruster & Stricker, Priest 2....	4	470
Hoover Bros., Banks 1.....	¶.15	675
MEDINA COUNTY—		
E. R. Edson & Son, Ripley 41....	*	458
MONROE COUNTY—		
Early Gas Co., Hill 1.....	40	1280
MORGAN COUNTY—		
Kepple et al, Mills 1.....	*	1700
PERRY COUNTY—		
N. E. Altier & Sons, Monahan 9..	*	1085
PUTNAM COUNTY—		
Brown et al, McCullough 3.....	35	....
TUSCARAWAS COUNTY—		
Ohio F G Co., Weber 1.....	¶.13	4470
WASHINGTON COUNTY—		
Pickens et al, Adkins 1.....	200	1775
Depuy Bros., Hendershot 1.....	¶.45	1340
Baker & Dailey, Pryor 1.....	¶.22	1250
Hope Const & Ref Co., Reese 1...	*	2181

INDIANA

DAVIESS COUNTY—		
Spaulding et al, Beck 2.....	¶	631
HANCOCK COUNTY—		
Eastern Indiana Gas Co., Fee 1...	¶	918
J. H. Snider, Pope 1.....	¶	967
HENRY COUNTY—		
G. W. Sweigart, Sweigart 8.....	¶	....
JAY COUNTY—		
Mesel Drilling Co., Keller 1.....	5	1035
KNOX COUNTY—		
National Consumers Oil Co., Wolfe 3	¶	583
Maude Wolfe 4.....	¶	781
PIKE COUNTY—		
Midwest Dev. Co., Campbell 2....	*	860
Murphy Oil Co., Stewart 3.....	*	1364
Inland Pet. Products Co., Craig 3..	*	1367
SPENCER COUNTY—		
Santa Fe Oil Co., Berg 6.....	9	760
SULLIVAN COUNTY—		
National Consumers Oil Co., Hayden 1	*	2561
Carter Oil Co., Lincley 1.....	*	2870
Coates et al, Sinclair 1.....	*	2661
VIGO COUNTY—		
Carter Oil Co., Paddock 1.....	20	2150
WABASH COUNTY—		
Homer Simmons, Brubaker 1.....	*	944

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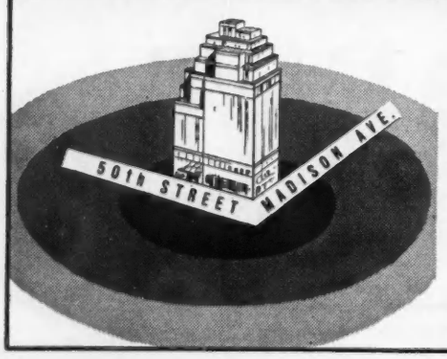

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EASTERN FIELDS

Pennsylvania well makes 50 barrels hour initial.

* * *

Moving in machinery for first South Carolina test.

Pittsburgh.—New Penn Development Corporation's Crawford 1, Keating Township, Potter County, Pennsylvania, center of Eastern Fields oil interest as it is the only test topped with a heavy-duty deep-well rotary rig, stopped drilling last week at 8482 feet for a test. The depth is well below that at which operators expected to find the Medinas. The well, in 18 months drilling with cable tools, slowed by frequent cavings, was taken over by the rotary at 6085 feet. In the extreme southwestern part of the country, the test is the first scheduled for the Medinas in that vicinity. The formation is productive of gas in Cattaraugus County, New York, and of both oil and gas in Ohio. Tests of the Medinas in other parts of Pennsylvania, however, have not been successful. The Oriskany sand at the Crawford well was dry.

An excellent completion was recorded in the New York-Pennsylvania Oriskany area, Empire Producing Company's Della Mulvey 1, Alma Township, Allegany County, on the New York side, showing for 18,000,000 cubic feet a day when completed 10 feet in the formation at 4756 feet. The first gas show was at 4749 feet. Rock pressure was 860 pounds. Two new locations were announced for Potter County, on the Pennsylvania side. North Penn Development Company on the James Hill farm, West Branch Township, and Hanley & Bird on the Flora Rooks farm, Harrison Township.

50 Barrels Hour

The stray Sliverville sand area southwest of Lewis Run, McKean County, Pennsylvania, repeated for the fifth time last week since Niagara Oil Corporation's discovery of August 24, 1937, which was the Bradford area's first gusher in 15 years. The new well is by the same company, about 500 feet west of the discovery, and has an estimated initial production of 50 barrels an hour. The sand was topped at 1627 feet and the well completed 2 feet in. A total of five flowing oil wells, of which the Niagara company owns three, and one large gas well have been successfully completed in this area, while more than a dozen tests have tried for the sand but missed it.

Minard Run Oil Company, which has the other two oil wells, reported that its test 4200 feet south of the other wells and an offset to Becker & Williams 6,000,000 cubic feet gasser, topped the Sliverville sand at 1718 feet and had a hole full of oil when deepened 6 inches in formation. The well, about 33 feet lower on structure than the gasser, was to be drilled in when pipe connections were completed. Both the Niagara and Minard Run companies are undertaking additional tests in the area, while Becker & Williams have cased an offset to their gas well to the top of the Sliverville sand at 1730 feet. Healy Petroleum Corporation, with two tests drilling on the Lewis Run Manufacturing Company's property, was at 1771 and 1150 feet.

South Carolina New Entry

A. B. Crews et al are bringing in machinery for a test on the Lee Williams tract, 8 miles northeast of Hemingway, Georgetown County, eastern South Carolina, the first to be undertaken in the history of this Atlantic Seacoast county. Operators have taken leases during the past few months on thousands of acres in Georgetown and adjoining Williamsburg County where encouraging oil seepages were found.

In Indiana, Carter Oil Company's Louisa M. Padduck 1-B, Section 16-10n-10w, Prairie Creek Township, Vigo County, was carried to 2150 feet and after acidization with 1000 gallons made 19 barrels of oil in 11 hours along with 1,500,000 cubic feet of gas.

WEST VIRGINIA

Company, Well and Location	Init. Prod. Bbls.	Depth
CABEL COUNTY—		
Skidmore & Jett, Kress 1	¶.90	3555
G. T. & G. B. Ray, Savage 1	¶.24	3588
Sue Gas Co., Coffman	¶.15	3437
CALHOUN COUNTY—		
Miller et al, Brannon 1	¶.24	2235
GILMER COUNTY—		
Wilsar et al, Whiting et al 1	¶.99	1603
P. D. Phillips, Wilson 1	¶.18	2097
K. F. Ermlich, Jeffries 2	*	1788
KANAWHA COUNTY—		
Mullins Gas Co., Faber et al 1	¶19.20	4895
Hays O & G Co., Evans 1	¶9.97	4970
Columbian Carbon Co., Hamilton 1	¶.28	5253
LOGAN COUNTY—		
Southeastern Gas Co., Covey 1	¶.55	2925
MONONGALIA COUNTY—		
Pittsburgh & W. Va. Gas Co., Price 5179	1	3250
RITCHIE COUNTY—		
Rutherford Oil Co., Cuthbert et al.	½	500
Mud Lick O&G Co., Brissey 2	¶.80	1918
Hope Nat. Gas Co., Jordan 963	*	2105
ROANE COUNTY—		
Reed et al, Ferrell 1	¶.50	....
WAYNE COUNTY—		
Brazil Burgess Gas Co., Lester 2	¶.20	3350
WETZEL COUNTY—		
Midcap et al, Midcap 1	25	1850
WOOD COUNTY—		
Wamsley O&G Co., Stagg 1	1	1782

KENTUCKY

DAVIESS COUNTY—		
Rex-Pyramid Oil Co., Yeister 1	10	850
Christian 1	*	....
FLOYD COUNTY—		
Kentucky-W. Va. Gas Co., Stepp 565	¶.13	2490
HENDERSON COUNTY—		
Clark & Snyder, Cooper 1	12	750
LEE COUNTY—		
Willis Oil Co., Frisley 17	40	....
McCown & Wissing, Combs 10	25	1132
South Penn Oil Co., Flahaven 9	5	1130
Thomas Witmer, Tipton 9	3	640
McLEAN COUNTY—		
Cox et al, Bennett 2	75	1111
OHIO COUNTY—		
Hatfield et al, Cobb 4	*	640
Hunter et al, Carter Bros. 5	*	635
The Petroleum Co., Showden 3	*	760
POWELL COUNTY—		
South Penn Oil Co., Adams & Lambertson 11	5	....

PENNSYLVANIA

ALLEGHENY COUNTY—		
Purdy & Getty, Bennett 1	¶	....
Rodgers Development Co., Johnston 6	*	2435
POTTER COUNTY—		
Ward Wasson, Hall 1	¶5.50	5185

NEW YORK

ALLEGANY COUNTY—		
Empire Producing Co., Mulvey 1	¶18.00	4756

TENNESSEE

CLAY COUNTY—		
H. Overstreet, Cordell Hull 1	240	555

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN FIELDS

Shaping up for active drilling campaign in early summer.

* * *

New shallow Traverse lime discovery in Allegan County.

Mt. Pleasant, Mich.—With an 8-months high of 27 drilling permits issued this week by the state, and several encouraging developments, particularly in Western Michigan, the industry as a whole appears shaping up for record activity by early summer.

Chief development of the week was opening of a new shallow Traverse lime producing area in Allegan County, and the definite establishment of a second area, in the same county, as commercially productive from the 1600-foot lime horizon.

Eureka Development Company's Widenfeller 1, NE NW SW, Section 29-4n-12w, Dorr Township, 5 miles east of the Salem field, acidized into an estimated 300-barrel producer. Traverse was logged at 1610 feet and the well acidized at 1615 feet, to a 40-barrel swab-flow initial. A 24-hour test was not available up to early week due to storage shortage.

Meanwhile, 5 miles south of the Salem field, S. B. Hood, trustee's Wright 1, Section 9-3n-14w, is producing at the rate of 500 barrels daily, natural, after being cased with 5-3/16-inch at 1576 feet, in Traverse lime. Test was bottomed at 1610 feet, producing from 200 to 250 barrels daily before casing had been run.

Pure Takes Over Shell Leases

Shell Petroleum Corporation which has carried from 10,000 to 150,000 acres in Michigan since 1930, but never operated on more than a restricted basis, is withdrawing from all active participation in Michigan development.

E. F. Clagett, general manager of Pure Oil Company's Michigan producing division, this week announced, tak-

MICHIGAN Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALLEGAN COUNTY—		
Dapar Oil Co., Kent 1, se se sw 4-1n-13w	*	1490
Vague & Nilsen, Vedetta 1, sw ne se 25-2n-14w	*	1615
GLADWIN COUNTY—		
Sun, Strohkirch 4, se ne ne 9-18n-1w	526	3663
ISABELLA COUNTY—		
Pure, Wille 10, ne ne nw 4-14n-6w	*	4031
KALAMAZOO COUNTY—		
Premier Oil Co., Bourner 1, sw sw sw 3-2s-12w	*	1553
MONTCALM COUNTY—		
Smith Pet. Co., Williams 1, sw sw se 17-11n-7w	*	3366
Rex Oil Co., Higgins 1, sw nw nw 13-9n-8w	*	3142
SAGINAW COUNTY—		
Hogan, Inc., Price 1, sw nw nw 2-11n-1e	*	3233

*Failures; †Junked; ¶Million cu. ft. gas.

ing over all of Shell's Michigan leases, about 110,000 acres, on a 50-50 basis.

Last week Shell's Michigan personnel received transfer instructions for other districts. Most of the personnel will go to Centralia, Illinois, it was reported.

With the exception of a wildcat drilling campaign on the Broomfield structure in Isabella and Gratiot counties, and drilling of a productive 80-acre lease in the Crystal field in 1935, Shell had never directly drilled in Michigan. It had, however, participated in a dry-hole basis on numerous wildcats and had farmed out to independents several productive gas and oil tracts.

Taking over the Shell acreage, put Pure in the top position in Michigan in the spread of acreage. Combined holdings now represent close to 250,000 acres. In the Shell leases, Pure will have an opportunity to develop in the new Edenville, Midland County, play, a factor that is believed to have influenced the deal. Shell had several tracts close to the discovery Edenville area, while Pure had little if any acreage in the play. Pure plans immediate drilling of an 80-acre tract, located less than a quarter mile of the Edenville discovery.

Michigan lease sale

Mt. Pleasant.—The Michigan conservation commission, meeting at Lansing, last week voted to receive bids for oil and gas leases on 10,717 acres of state lands at the next public auction. The tracts are in areas where the state's holdings are not sufficiently solid to control development, and it was explained that the offering was not in conflict with the commission's previously announced policy not to encourage further development in view of the present crude price structure.

Illinois oil and gas map issued by state survey

M. M. Leighton, of Urbana, chief of the Illinois Geological Survey Division of the State Department of Registration and Education, advises that the division has prepared a large wall map showing the location and known size of all oil and gas fields in Illinois discovered prior to November 12, 1937. The map also shows the routes of pipe lines that traverse the state, carrying crude oil, natural gas and gasoline.

All oil and gas fields are named on the map and separate symbols indicate whether or not they are productive or abandoned. Pipe lines are identified by company ownership; locations of pump or compressor stations and refineries are indicated, and also, the locations of isolated producing wells and recent wells which have shown oil-sand saturation at a distance from producing fields.

The map was prepared by Alfred H. Bell, head of the Oil and Gas Division of the Geological Survey, and George V. Cohee, assistant geologist. The scale is approximately 8 miles to the inch.

Single copies of the map may be secured by Illinois residents and libraries, until June 1, 1938, without cost except for a mailing charge of ten cents. Orders should be sent to Enid Townley, Map Agent, 305 Ceramics Building, Urbana, Illinois.

Raymond Township may develop commercial gas.

* * *

State department begins probe of stream pollution.

Olney, Ill.—Outside of the basin area, in Champaign County, Casey-Edwards Oil Company's A. T. Porterfield 1, Section 9-17n-10e, Raymond Township, was reported a gas well with an initial open flow of 1,500,000 cubic feet daily by University of Illinois engineers who tested the well last week. Gas was of 792 B.t.u. rating, and production from 445 feet. A second test is under way, and if similar results are obtained the area will be commercially developed. The Porterfield well, a wildcat, had been drilled to 1065 feet in search of oil production, the test of the shallow gas sand having been made while operators debated changing equipment for deeper drilling.

Rain which fell steadily throughout the basin area over the week-end continued well into last week, making the outlook for new tests even more discouraging than a week ago. Some operators were reported considering importing pirogues from the Louisiana swamp lands in an effort to keep up with drilling commitments. As the Illinois basin area boom enters its second year, the weather appears to be putting forth every effort to return new fields to farming country. And weather prophets of the region say there's more rain coming.

In the busy new Centralia pool, two fair producers were brought in within the city limits last week: John Pugh's Phonix 1, in the Pullen & Hamm Boulevard addition, pumped 486 barrels the first 21 hours, while Lincoln, Rourke & Moore's Bell 1, nearby, came in at the rate of 20 barrels an hour without a shot. John Pugh brought in Copple 1 as the first well within the city a week ago, and its initial 24-hour production was 325 barrels.

Largest initial production of any well from the Benoist formation in either the Centralia or Patoka areas was Thompson, Self et al's Emma Hanseman 1, Section 12-1n-1w, three quarters of a mile north of Centralia. It came in Tuesday at 434 barrels daily. Benoist was saturated from 1361 to 1391 feet.

Centralia Spacing Off

Pressure of Centralia property owners eager to collect every possible royalty dollar brought repeal of the city's recently enacted drilling ordinance last week. Whereas drilling had been restricted to two wells to each city block, the council voted to let down the bars and permit offsets within 200 feet of wells already started. Rufus A. Blowers, of Owensboro, Kentucky, was given a lease on the city's 40-acre park, now surrounded by wells either producing or nearing the pay horizon, in return for 45 percent of oil and gas proceeds. Six wells are to be drilled in the park.

While fair production is being obtained from the shallow Benoist sand in the Centralia area, drillers are not without grief. Stuck drills are frequent, and old coal mine chambers are frequently encountered, causing drillers to lose their mud. Several lawsuits are pending and others threatened against owners of wells that have allegedly been drilled on land previously leased for coal operations.

City of Mattoon, Illinois, production headquarters of many major oil companies and independent producers, last week joined the list of cities with drilling ordinances, although there is yet no indication that a test might be started in or near the city and there is at present little activity in Coles County, on the northern edge of the area now holding interest.

First test to be drilled in Olney, B. C. Morrison's George Conour 1, near the north city limits, was being plugged. It had first reported a 7-foot McClosky saturation, and when tubing was run it was believed the casing was carried below the saturation. A perforating gun was used and the well acidized, but it failed to make a producer. About a half mile south of the Conour site, David Cooley et al have a derrick on the Warren Bellinger lot, but the starting date on this second Olney well is still in doubt.

Pollution

The state conservation department indicated that basin operators may be faced with an additional problem, stream pollution. Farmers were reported complaining that oil wastes are being emptied into the Little Wabash River, its tributaries and adjacent wells. Several communities which rely on wells for water claim seepage has contami-

ILLINOIS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JEFFERSON COUNTY—		
Carter Oil Co., Douthet 1	147	1962
Struboyes & Tomberlin, Morse 1	*	2465
RICHLAND COUNTY—		
Illinois-Canadian Corp., Padgett 1	*	3003
WAYNE COUNTY—		
Kennova Oil Co. (Tarpon Petroleum Co.) Bright 1	*	3040

*Failures; †Junked; ¶Million cu. ft. gas.

nated their supplies, while conservationists charge that thousands of fish are being destroyed in the polluted streams. While the department announced no action on the problem, it was indicated that it would shortly be formally brought before producers.

Bur-Kan Oil Company's Allen 2, Section 27-4n-10e, Olney Township, may be Richland County's first deep test if cooperation is obtained from other companies holding acreage in the north Olney area. Failing to find the McClosky, which was encountered at 2996 feet in the No. 1 on this lease, Bur-Kan was going on to the St. Louis lime depth last week when the drill stem stuck at 3090 feet. George Burgher said his company would like to go down to the Trenton sands, expected at about 5000 feet, if production is not obtained at the St. Louis level. The Allen 1 was completed January 19 at 3045 feet with a flowing initial production of 300 barrels daily.

Carter Oil Company's W. T. Cox 1, Section 14-4n-5e, proposed Oskaloosa Township test scheduled for the Devonian formation at about 4500 feet, in wildcat territory of Clay County, was preparing to start last week. A derrick had been up for several weeks, but title trouble developed that was not cleared up until last week. The area has been subjected to a seismograph test and the location was chosen from a large block of leases held by the company. It is 6 miles west and a little north of Louisville, in the northwestern part of the county.

Equipment was expected this week for a Coles County test by Illinois Oil Developers on the J. F. Tomberlin farm, Section 21-11n-10e, Hutton Township. Preliminary work has been completed by the company, which holds considerable acreage in this township.

In Wayne County, adjoining Clay County to the south, the only active operation is preparations by Benedum-Trees Oil Company for a test on the W. Gloyd farm, just west of this company's small pumper on the Knapp farm. The Texas Company is assured of a producer in Silverman 2, Section 16-3s-7e, Big Mound Township, but is awaiting pipe line facilities before bringing it in. Silverman 1 was completed in the McClosky at 3287 feet and, after acidization with 2000 gallons, flowed 385 barrels in 19 hours.

California offers night course in oil geology

With Tuesday, April 12, as the opening date, the University of California Extension Division is offering a new course in Practical Oil Geology which will meet weekly on Tuesdays at 7:00 p.m. at the 815 South Hill Street, Los Angeles, classroom headquarters of the state university Extension Division.

Instructor in the course will be William Woods Porter. The course will feature an introductive treatment of the geological factors affecting the origin of oil and rocks, the formation of oil fields, the exploitation of oil reserves and their value. Mr. Porter, who was graduated from Harvard magna cum laude taking final honors in geology, is a well-known consultant in geological engineering. His University of California Extension course will be open for enrollment to everyone interested.

ROCKY MOUNTAIN FIELDS

Lance Creek extension inaugurates slight drilling boom.

* * *

Two Wyoming wildcats expect results within short time.

Casper, Wyo.—Seven new wells in the Lance Creek field were in various stages of getting under way at the start of the week due largely to the completion of an important southwest extension test a quarter mile west of the nearest Leo production in the Niobrara County field.

Nebraska-Wyoming Oil Company (C. L. Price and associates) completed Lamb 1, NE NW NW NW 7-35n-65w, for 63 barrels of oil per hour on a 15-hour gauge. The 7-inch production string is set at 5382 feet and hole bottoms at 5401 feet. The well is a 40-acre location west of Mackinnie Oil & Drilling Company's Thompson 2, former southwesternmost producer.

J. E. Manning and associates immediately following completion of the Lamb well started moving in rotary equipment for Elsie Pecklow 1, SE SE SE 1-35n-66w, a little over a quarter mile west and north, which will make a closely watched extension test of Lance Creek.

On 330-foot location to the east of Lamb 1, Mackinnie Oil & Drilling is building derrick for Thompson 4, C NE NW 7-35n-65w. Price and associates are spotting location for a second well on the Lamb lease, while A. B. Cobb is preparing to offset the Lamb well on the north, exact location has not yet been announced, but probably will be in SW SW SW 6-35n-65w.

Another important outpost completed on the north side of Lance Creek. Argo Oil Corporation's Ford 6, NW SW NW 33-36n-65w, completed for 1680 barrels initial with Leo saturation logged at 5292-5312 feet, and bottom of hole at 5330 feet. Argo started Ford 5, SW SE 33-36n-65w, and is waiting on cement to set around the 13⅜-inch surface casing at 210 feet.

On the east side of the field, Continental Oil Company's Apex 1-Account 3, SE SE NE 34-36n-65w, a northeast offset to the Leo discovery well, made a record completion in the Middle Minnelusa, gauging 2400 barrels daily from 4 feet of sand drilled at 5440-5444 feet. Continental is moving in rotary for Tom Bell 11, SW SW 27-36n-65w, another Lance Creek first report.

J. M. Huber Corporation is moving in material for H. & M. Lease 1, NW NE NE 8-35n-65w, a location that had been suspended for the past several weeks, and an important extension test more than a mile southeast of the nearest production. The well is three eighths of a mile east and an eighth of a mile south of Continental's Deilman 3-A, SE SE SW 5-35n-65w, which is coring at 4738 in the Minnekahta, marker bed above the First Minnelusa member. Successful completion of H. & M. 1 will stimulate activity on the southeast side of the field as much as has Price's Lamb 1.

General Petroleum Corporation's Government 1, C NW SE 21-35n-77w, Cole Creek structure, 13 miles northeast of Casper, and easily the most important wildcat drilling in the Rocky Mountain area, is swabbing down tubing for a test of the First Wall Creek sand. Operators expect to have a production test within the next few days. The 8⅝-inch production casing is set on top of the sand at 6680 feet and hole bottoms at 6840 feet. Saturation was cored between 6680-6695 and 6740-6840 feet, giving 115 feet of oil sand. Porosity through the larger part of the saturated section is high, but the section is interspersed with several hard zones of a few feet in thickness. Breaking of a flange on the hoisting drum, and fouling of the sand line delayed swabbing for 20 hours.

Stanolind Oil & Gas Company's Johnson 1, C SE SE 3-33n-98w, Beaver Creek structure, Fremont County, another Wyoming wildcat being closely watched, is coring in the Dakota series at 8171 feet, nearing its major objective. The well passed through a thin Muddy member sand at 7939 feet which contained a show of gas.

Third Rocky Mountain wildcat that has been in the limelight, Gulf Oil Corporation's Union Pacific-Larsen, C SE NW 13-13s-49w, on a 26,000-acre block in Cheyenne County, Eastern Colorado, is fishing for tools at 4813 feet. Test will drill deeper into the lime with cable tools, which have replaced the rotary equipment.

In the Wertz field, Carbon County,

MOUNTAIN STATES Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MONTANA		
TOOLE COUNTY (Kevin-Sunburst)—		
B. A. S. Arnow, Government 1, se se sw 18-35n-2w	30	1644
WYOMING		
CARBON COUNTY (Medicine Bow)—		
Ohio & California Cos., Union Pacific-Johnson 6, sw se 23-21n-79w.	¶1½	5777

*Failures; †Junked; ¶Million cu. ft. gas.

Wyoming, Sinclair-Wyoming Oil Company's Wertz 12-B, SWc SE NW NW 7-26n-89w, deep well to the Tensleep sand, is nearing objective, drilling at 5507 feet in the base of the Chugwater. Sinclair's Muskrat 2-B, NW NW NE 4-33n-92w, deep test of the Muskrat gas field, which will go to the Madison lime, is drilling at 4358 feet in the Frontier formation.

Paul Stock, of Cody, Wyoming, has taken over the old Cody Anticline structure, Park County, northern Wyoming, and has torn down wooden derrick on old producer, Government 1, S NE SE 25-48n-91w, and is preparing to deepen from 2886 feet. A new steel derrick has been erected, and Stock is moving in heavy rotary equipment.

Resolute Oil Corporation's Government 1, C NE NE 20-57n-101w, Badger Basin field, Park County, is fishing for bailer at 8440 feet in the Frontier formation where it is testing production. Northern Pacific 1, C NE NW 21-57n-101w, is still testing at 8654 feet.

In the North Baxter Basin field, Sweetwater County, Selegna Oil Company's Union Pacific 1, SW SW 11-20n-104w, is at critical depth, testing gas saturation at 3842-3854 feet in the Dakota sand. Total depth is 3870 feet. The well passed through the Frontier sand at 3225-3261 feet where it had a small show of gas.

In the Shawnee field, Converse County, where shallow oil and gas production has been developed, Wyshawn Oil Company has contracted to carry Lindley 1, N SE SE 34-32n-69w, 2000 feet for a test of the Pennsylvanian series. Located on the upthrow side to the south of the major fault transversing Shawnee, the test should find the White River beds lying unconformably on the Chugwater (red beds) just above the Pennsylvanian rocks, making them within easy reach of the drill.

Chadron-Osage Oil Company (E. B. Jones et al) is cleaning out State 1, SW SW SW 16-32n-69w, deep test of the Shawnee field at 4060 feet where well shut down the past fall on top of a gas sand, which has been tentatively identified as Shannon.

Italo Petroleum Corporation is rigging up cable tools to drill Government 1, SW NW SW 11-44n-98w, from the Embar at 3246 feet to the Tensleep sand. The well, which is pumping around 20 barrels daily, recently extended the Hamilton Dome field, Hot Springs County, northern Wyoming, to the northwest.

Move in storage tanks to North Dakota test

Minot, N. D.—Material for two oil storage tanks of 250-barrel capacity each have been received at Standard Oil Company of California's deep wildcat test on the Nels Kamp farm, Williams County, where operations are to begin shortly from 6750 feet after a shut-down since January because of a shortage of water for drilling.

The test, first deep wildcat in the history of North Dakota, is being closely watched, not only by companies and individuals interested in North Dakota development, but also by operators in Montana and Manitoba, Canada.

Large initials in Wilmington wells proration problem.

★ ★ ★

Deepest well in shale below 14,270 feet and still going.

Los Angeles—Two widely separated spots in California are in the spotlight this week—Wilmington field, and the world's deepest wildcat well being drilled in Kern County, by Continental Oil Company.

Wilmington, because of the completion of the gusher-type of well, has stirred the industry to the point where oil curtailment activities are taking up the entire time of the Central Committee of California Oil Producers.

Hancock Oil Company's No. E-6, situated at the most southeasterly flank of the field, swabbed in for approximately 6700 barrels of oil per day at 4023 feet, and is thought capable of flowing a maximum of 15,000 barrels daily if given the chance. This well is east of the Edison plant and is situated close in to what is believed to be the axis of the field. No offset wells will be drilled to the south of it, because the Hancock well is nearest the ocean that wells will be permitted. Due to the drive to curtail excessive production, the company will endeavor to choke the flow as early as possible.

Westgate Greenland Oil Company completed what is expected to be a record producer in recent years for the state. The company's A-2 swabbed in for an estimated yield of 1000 barrels of oil per hour. This is a new record for the field, and also interferes with the present program of voluntary oil curtailment.

However, under the present set-up, the well will be permitted to flow for seven days, and then will be choked back in conformity with the rules and regulations of the Central Committee of California Oil Producers.

"Deep as a Mountain"

Although there are a number of deep tests drilling in the San Joaquin Valley, Continental Oil Company's KCL No. A-2, at Wasco, takes first place in point of interest. First, because if it keeps on drilling, it will soon be as deep into the earth, as Mt. Whitney is high. Mt. Whitney soars into the sky to a height of 14,501 feet. Continental's well early this week was making progress with the drill below 14,270 feet in a hard, shale formation devoid of oil or gas showings, although unofficial reports stated that there is a possibility a change would be forthcoming.

Recent core recoveries showed the formation below 14,220 feet to be a fractured shale, which may indicate that a sand might be cored even deeper that would develop enough pressure to bring out the oil. Any chance of showings in the ditch coming from a point higher, might be taken into consideration, scouts say.

Company officials are brief and to the point as to prospects of this world-breaker of records. They admit the bit is in a hard shale, and will not predict as to the outcome. They do state however, that they intend to drill right along, possibly indefinitely, to determine what the drill will pick up at this interesting depth. There seems to be no question of this wildcat well attaining a greater depth, barring mechanical difficulties.

Superior Oil Company has just brought in its second commercial producer in Kern County. Wagner 3, 35-28-25, Rio Bravo field, northwest of Bakersfield, bottomed at 11,265 feet, with 7-inch casing set at 11,247 feet, came in for an initial production of 500 barrels of 40 gravity oil per day.

The Rio Bravo field has some of the deepest active wells in the state. General Petroleum Corporation's Wagner 1, is drilling in hard shale below 8900 feet. George G. Getty, Inc.'s Ramsey 1 is down to 9250 feet in hard shale. Superior Oil Company's Geisinger 1 is in hard brown shale below 10,750 feet, while the company's Ruhl 1 is down to 10,600 feet. Another Superior well, Wagner No. 2, at 10,350 feet, is in brown shale. Union Oil Company's KCL 2-34, 34-28-25, is coring in brown shale below 11,160 feet, and apparently has only a short distance to go for the company's KCL 1-34, discovery well, tapped oil sand at 11,240 feet.

Because of a flow of salt water, Superior Oil Company has abandoned KCL 19, Section 3-30-26, at Bellevue, Kern County. This project developed a yield of about 850 barrels of 32 gravity oil last fall, from 7870 feet, but within a week it died. Swabbing did not aid the well, and the addition of a compressor failed to kick it in satisfactorily. Redrilling of the project from 3250 to 7800 feet developed nothing but salt water.

What is described by field scouts to be a geological upset, has been found in Coast Exploration Company's Coffee 1 exploratory well, Section 6-28-29, at Round Mountain, Kern County. This project was cored to 1981 feet, the cores from 1906 to 1981 showing a 75-foot zone carried 60 feet of saturated oil sand, which will be designated as the Walker.

Wood-Callahan Oil Company has apparently succeeded in developing production from the Kern River series in a wildcat east of the Mountain View field. Its Community 2, Section 21-30-29,

bottomed at 3674 feet and during a production test showed surprising results, but is expected to be equipped with a pump to improve its chances of producing. The company's Porter 1, a mile west, is also coring for the Kern River series, which corresponds to the Chanac productive zone at Mountain View.

Union Oil Company brought in Vicente 2, in the Santa Maria Valley field for 1100 barrels of 15.9 gravity oil at 4986 feet. Location has been staked by the company for Bradley Lands 3. George F. Getty, Inc., has picked site for Vicente 4.

A significant report from San Joaquin Valley states that Petroleum Securities Company, operating jointly with two other companies, has made a major discovery 12 miles east of Coalinga. Gatchell 2, drilling below 6000 feet, has passed out of about 800 feet of shale and is expected to encounter the Eocene. Eocene production would open up a light oil reserve.

Solution of a big gas yield in the Rio Bravo field, is going to be credited to Superior Oil Company, according to official announcements this week. William Keck, president, revealed plans for construction of a natural gasoline absorption plant costing $700,000, that will have a daily capacity of 60,000,000 cubic feet of gas. Union Oil will share in the cost. There are two producing wells in the field, with four others drilling.

Sunset Oil Company, under a drilling arrangement with Lloyd Corporation, this week gets under way an exploratory well on Section 24-3-23 in the northeast end of the Ventura Avenue field. It will go down 1000 feet east of a test drilled several years ago by Shell Oil Company which developed some interesting showings. Ralph B. Lloyd, head of Lloyd Corporation, believes that the Lloyd zone will be found in the new wildcat. North of the Lloyd test, Giant Petroleum Corporation is starting a wildcat on a portion of the old Connett lease.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BELRIDGE—		
Tidewater Associated, N. Belridge 2	612	8711
Reward 7	1670	8891
CASMALIA—		
Pima Drilling Co.'s Morganti 1	250	1775
DOMINGUEZ—		
Union, Hellman 49	165	6724
EL SEGUNDO—		
Termo Co., Termo-Elsie 2	300	7400
FRUITVALE—		
Western Gulf, KCL B-33	100	3968
MIDWAY-SUNSET—		
Otis Hoyt, Maricopa 9	85	1520
ROUND MOUNTAIN—		
Calif-Western Oil Co., No. 10	225	1824
SANTA MARIA VALLEY—		
R. R. Bush Oil Co., Wylie 2	500	4815
TEN SECTION—		
Shell, KCL B-41	2424	8216
VENTURA AVENUE—		
Shell, Taylor 93	2476	8114
Tidewater, Lloyd 79	326	5005
WILMINGTON—		
General Petroleum Corp., Channel Comm. 6	154	3310
Harbor Comm. 5	2400	3900
Harbor Comm. 9	412	3025
Westgate Greenland Oil Co.'s City of LB 3	4200	3886
No. 4	4000	3888
Caminol Oil Co., Harbor 2-7	150	3192
GRAPEVINE-WHEELER RIDGE—		
Petrol Corp., Reserve-Petrol No. 32-2 *		6019

*Failures; †Junked; ¶Million cu. ft. gas.

IMPORTANT WILDCAT TESTS

ARKANSAS

BRADLEY COUNTY—Phillips Pet. Co.'s Marsden 1 (was Splawn 1), ne sw 9-16-11, dk and mir.

CALHOUN COUNTY — J. R. Lockhart's Hearnesberger 1, 16-11-13, woc surf csg.

CLAY COUNTY — Canadian American Oil Co.'s Smith 1, c ne nw 9-20-8, elev 375 ft, top Nacatosh 800 ft, sd 1005 ft shale.

CLEVELAND COUNTY—Marwick & Olds' Aubrey Vance 1, nw nw 18-11-11, elev 241 ft, Nacatosh 2809-63 ft, sd 2901 ft.

CRITTENDEN COUNTY—Manning & Martin's Cartwright 1, se nw sw 16-7n-8e, sd 4230 ft sand and shale.

COLUMBIA COUNTY — Kerr-Lynn Oil Co.'s Barnett 1, se sw ne 14-17-20, elev 321 ft, top Permian lime 7618 ft, 7-in csg 7051 ft, 5½ in csg 7720 ft, perf csg 7623-51 ft, flowed 37.2 grav oil, si, for tanks, opened flowed 78 bbls in 2 hrs, ceased to flow, started show sw, due leak in csg, running tub with pckr for new test, td 7740 ft. Standard of La.'s Bodcaw-Barbara 1 (formerly Bodcaw Lbr. Co. 1), c se ne 18-16-22, elev 253 ft, base massive anhydrite 3422 ft, top Travis Peak 4312 ft, fsg 7226 ft; Crone 1, c nw se 8-16-22, elev 271 ft, top anhydrite 3288 ft, top Permian lime 7264 ft, cored sat lime 7264-72 ft, showed 660 ft oil and mud 20-min drill stem test 7225-72 ft, ran electrical tester, arr run csg, td 7272 ft. W. P. Phillips 1, 15-17-19, showed 105 ft mud and oil with sg in 20-min drill stem test 4616-50 ft (Travis Peak), red shale, dr 4805 ft; Warren 1, nw nw 17-16-22; Waters 1, c se se 7-16-22, lcn. E. O. Olds' Mary Dennis 1, nw se sw 4-17-21, owdd, td 4513 ft.

DESHA COUNTY—Columbian Fuel Corp.'s Victoria Cross 1, sw sw 34-8s-3w, woc surf csg.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, sdtr at 2180 ft, old td 2944 ft.

JOHNSON COUNTY—Ark. La. Gas Co.'s Hudson 2, se nw 14-10-24, mim.

LINCOLN COUNTY — Fitzwater, Inc.'s Bowens 1, nw sw ne 26-9-6, sd 1130 ft.

LITTLE RIVER COUNTY—Henan & Coe's W. D. Waldrop 1, sw 1960 ft. J. G. Strahan et al's Dierks Lbr. Co. 1, sw se 21-12-28, arr run formation tester, 2320 ft.

LONOKE COUNTY—J. W. Eddington et al's Anderson 1, nw ne 7-4-9, set 12-in csg, woc 85 ft.

MILLER COUNTY—F. F. Earles' General American 1, se sw 20-14-26, mim.

UNION COUNTY—E. G. Bradham's S. L. Robbins 1, sw ne 12-19-16, elev 214 ft, sd 2300 ft (contract depth). Joe Modisett et al's Frost Lbr. Co. 1 (Union Sawmill fee), ne ne 8-18-12, mim.

CALIFORNIA

CIERVO—Superior's Ciervo Unit Plan 1, 20-16-13, dr 5754 ft.

COALINGA—Pet. Sec. Co.'s Gatchell 1, 18-20-16, dr 6535 ft. Shell's Conlon 1, 30-19-15, dr 2464 ft.

EAST COALINGA—Pure's S.P.L. Co. 1, 31-18-17, dr 10,770 ft.

ARVIN—Union's Berry 1, 15-31-29, dr 4810 ft.

BELLVIEW—Continental's KCL D-1, 10-30-26, dr 8020 ft. Superior's KCL 9, 3-30-26, testing 7870 ft.

BELRIDGE—General's St. Helens 1, 12-28-20, sd 8238 ft. Ohio's Ford 1, 6-29-22, co 2030 ft. Shell's Voight 1-1, 32-27-20, dr 1960 ft.

BUENA VISTA LAKE—Ohio's KCL A8, 32-31-26, testing 8404 ft.

DEVILS DEN—Amerada's Beer 5, 22-26-19, woc 6803 ft.

EDISON—Wood-Callahan Oil Co.'s Porter 1, 20-30-29, dr 3550 ft.

FRUITVALE—Shell's KCL A-58, 29-29-27, dr 6140 ft.

GRAPEVINE WHEELER RIDGE — Richfield's KCL 1, 28-11-20, rigging up. Universal Cons. Oil Co.'s No. 1, 33-11-19, td 4988 ft, pmp 235 bbls, 50 percent water.

GREELEY—Shell's KCL 1B-76, 16-29-26, woc 998 ft.

LERDO—Standard's KCL 18-1, 29-28-26, dr 2349 ft.

McVAN—Desert Glow Oil Co.'s No. 3, 14-27-27, rig. Framac Oil Co.'s Brown 3, 22-27-27, co 1351 ft. Hobee Oil Co.'s McVan 3, 14-27-27, td 1185.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*	owdd—*old well drilling deeper.*
‡—*salt water (completions).*	owpb—*old well plugging back.*
†—*junked and abandoned.*	pb—*plugged back or plugging back.*
¶—*million feet of gas.*	r—*reaming.*
abd—*abandoned.*	rog—*rig on the ground.*
bbls—*barrels.*	rur—*rigging up rotary tools.*
br—*building rig.*	rust—*rigging up standard tools.*
b.s.—*basic sediment.*	sd—*shut down.*
csg—*casing.*	sdtr—*sidetracking.*
co—*cleaning out.*	sg—*show gas.*
dd—*drilling deeper.*	si—*shut in.*
dk—*derrick.*	so—*show oil.*
dr—*drilling.*	so&g—*show oil and gas.*
fsg—*fishing.*	spd—*spudding.*
ft—*feet.*	sr—*straight reaming.*
hfw—*hole full of water.*	sw—*salt water.*
in—*inches.*	td—*total depth.*
lcn—*location.*	ur—*underreaming.*
m—*milling.*	wih—*water in the hole.*
mim—*moving in materials.*	wo—*workover.*
mit—*moving in tools.*	wocs—*waiting on cement to set.*
mot—*milling on tools.*	wost—*waiting on standard rig.*
n, s, e, w—*north, south, east, west.*	
oih—*oil in hole.*	

POSO CREEK—Garven & Reynolds' No. 1, 30-27-27, rigging up. Harkness & Laws' Hunt 1, 28-27-27, material.

SAN EMIDIO—Shell's KCL No. 1-A, 26-11-22, fsh 7670 ft.

STRAND—Continental's KCL E-1, 17-30-26, grading.

WASCO SEMITROPIC—Continental's KCL A-2, 8-27-24, dr hd shale 14,170 ft. Standard's Randolph No. 2, 14-27-23, sd 9535 ft.

PYRAMID HILLS — Pyramid Prod. Co.'s Retherford 1, 27-24-18, dr 3014 ft.

DUCOR—Crusaders Oil Co.'s Muller No. 1, 1-24-27, td 37 ft.

TIPTON—Magnet Oil Co.'s Glaze No. 1, 15-22-26, to test 3282 ft.

SOUTHERN CALIFORNIA

BELLFLOWER—G. L. Clayton's Thornhill 1, 30-2-9, dr hd shell, 6525 ft.

PALOS VERDES—Rolling Hills Pet. Co.'s Weston 1, 27-4-14, dr 4220 ft, slight oil showing.

PICO—A. S. Johnston's No. 32, dr 3751 ft.

LOMITA—Sebastian Kramer's No. 1, 25-4-14, loc.

TOWSLEY CANYON—Towsley Canyon Oil Co., Hammon 1, 8-3-16, co 4100 ft.

WHITTIER—Fullerton Oil Co.'s Whittier 5, 25-2-11, rigging up.

CHINO—Southern Counties Pet. & Drlg. Co., Los Serranos 1, 22-2-8, rig.

ILLINOIS

BOND COUNTY—Universal's Molden 1, nw nw nw 24-6n-4w, td 2045 ft, rust. Whitehead's Pollan 1, nw se sw 26-6n-2w, td 2633 ft, ur 6-in csg. McBride's Butler 1, nw sw se 30-4n-2w, td 1385 ft, abd. Rigall's Neillson 1, ne ne nw 32-5n-4w, lcn.

CLAY COUNTY—Bonnie Oil's Schnautz 1, se sw ne 31-4n-8e, cor 3036 ft. Wicklund's McCauley 1 "A", ne sw nw 7-2n-9e, der. Campbell's Henderson 1, cn½ ne ne 7-4n-7e, c&p. Carter's Cox 1, ce½ se sw 14-4n-5e, der.

CLINTON COUNTY—Dalton's Clifton 1, ne sw sw 15-1n-4w, sd 1535 ft. Ellzy's Williams 1, sw nw sw 1-3n-1w, der. Schlosberg & Siegel's Monken 1, ne sw sw 4-2n-1w, dr 1558 ft. Wright's Wise 1, nw nw se 24-1n-3w, mim. Holley & Willis' Hughes 1, cn½ ne nw 18-3n-2w, td 1454 ft, abd. Noll & Conrey's Barth 1, nw se sw 12-1n-1w, td 1393 ft, testing. Gross' Eversgerd 1, sw nw sw 22-1n-4w, dr 960 ft. Lilly's Siegler 1, nw ne ne se 12-1n-1w, td 1380 ft, will lower 6-in csg. Brookside Oil's Dodillet 1, sw sw nw 21-1n-1w, sdo 1420 ft. Thompson-Self's Hanseman 1, se nw ne 12-1n-1w, td 1391 ft, swbg through tubng. Penn-Illi-

nois Oil's Molan 1, sw sw sw 28-2n-1w, dr 1100 ft.

COLES COUNTY—Miller's Tomberlin 1, se se se 21-11n-10e, spd and sd. Hughes' Swango 1, csw ne 27-13n-9e, sd 903 ft. Stipes' Millage 1, cnl ne se 5-11n-10e, spd and sd.

CUMBERLAND COUNTY — Jolly - Hill-Stipes' Jenkins 1, se ne ne 30-10n-9e, sd 2130 ft. Nat'l Consumers' Vanderhuff 1, nw ne nw 19-9n-9e, mog.

EDWARDS COUNTY—Cotton & Laller's Hays 1, ne ne ne 4-1s-10e, lcn.

EFFINGHAM COUNTY—Kingwood & Carter's Bartel 1, ce½ ne nw 26-6n-5e, td 4102 ft, testing. Kingwood's McWhorter 1, ce½ se nw 15-6n-6e, fsg at 2001 ft, may skid rig. Graham-Duncan's Richers 1, cn½ se nw 18-6n-7e, spd 35 ft and sd. Kroger's Shoenhoff 1, se nw sw 5-8n-7e, spd and sd. Obermeyer's Atkins 1, nw nw ne 3-6n-9e, dr 265 ft.

FAYETTE COUNTY — Carter's Miller 1, cw½ nw nw 12-8n-3e, pb to 1550 ft, testing. Farrely's Lilly 1, se sw se 16-8n-3e, ur 8-in csg. Wilson & Stokes' Fee 1, nw sw ne 14-8n-3e, lcn. Greer's Metzger 1, cn½ ne nw 19-5n-2e, der.

FRANKLIN COUNTY—Washburn's Neil 1, ce½ se se 6-5s-4e, td 2600 ft, run 6⅝ in csg 2595 ft.

JEFFERSON COUNTY—Sturbois & Tomberlin's Osborne 1, cnw se 8-2s-2e, dr 2085 ft. Nollem & Benoist's Kelley 1, ne nw ne 25-4s-2e, dr 2645 ft. Dee's Hamilton 1, ne sw nw 20-4s-3e, td 2911 ft. Myers Bros.' Duckworth 1, ce½ sw ne 33-4s-4e, rig. Dee & Foltz's Hamilton 2, sw sw nw 20-4s-3e, sd 1150 ft. Hausman's Myers 1, nw nw sw 7-1s-3e, mim. Foltz' Carroll 1, ne ne se 16-2s-1e, dr 1220 ft.

JERSEY COUNTY—Boyd's Wyman 1, nw se nw 32-7n-12w, sd 930 ft.

MARION COUNTY—Siegel & Scholsberg's Roddy 1, sw se sw 20-2n-3e, sd 2159 ft. Marion Oil's Wilson 1, ne ne se 18-3n-3e, sd 1475 ft. Hackman & Harris' Britt 1, nw nw nw 36-4n-1e, sd 1050 ft. Albachtan & Sims' Nichols 1, (was Mahutske Oil's) se sw se 12-4s-4e, pb to 2745 ft, pull csg. Dalton's Ira Dalton 1, nw se ne 19-1n-3e, sd 135 ft. Oil Royalties' Suggs 1, csw nw nw 11-2n-1e, to spd. Coyer's Mulvaney 1, se ne se 6-2n-4e, der. Shedden's Rawlica 1, sw ne sw 33-2n-1e, spd and sd. Thompson's Baker 1, sw nw sw 9-1n-1e, lcn abd.

MASSAC COUNTY—Kahle's Harvick 1, sw sw sw 23-14s-3e, dr 2875 ft.

MONTGOMERY COUNTY — Myer's Klekamp 1, sw sw se 29-8n-5w, mach.

POPE COUNTY—Whitlock's Amthis 1, nw nw ne 12-11s-5e, sd 1450 ft.

RANDOLPH COUNTY — Delaney & Mabee's Wilson 1, ce½ se ne 3-4s-5w, dr 3590 ft. Pioneer O&G Co.'s Johnie 1, se nw nw 28-6s-6w, sd 567 ft. Bremen's Wilson 1, se se se 22-6s-6w, spd and sd.

RICHLAND COUNTY—Mammoth's McCauley 1, sw se nw 28-3n-9e, co 3146 ft. Anderson & Cunningham's Franklin 1, nw nw ne 34-5n-10e, spd and sd. Parker's Berry 1, se sw ne 22-2n-14w, spd and sd. Miller & Ake's Schlichenmeyer 1, cne sw se 16-3n-10e, spd and sd. American Exploration's Johnson 1, cnw ne nw 29-4n-9e, rot der. Gulf's Hill 1, cn½ sw nw 2-4n-10e, td 3158 ft, abd. American Nat'l Drlg.'s Everson 1, ne ne se 23-3n-9e, dr 2156 ft.

SALINE COUNTY—Rogers' Saylor 1, se se se 3-10s-6e, co 1280 ft. Bolton's Beagle 1, nw nw nw 13-9s-7e, td 1871 ft, co to btm, 100 ft oih, 48 hrs, sd.

SCOTT COUNTY—Gregory & Mechling's Foltz 1, nw sw ne 31-14n-14w, sd 1196 ft. Sun Oil's Goodwin 1, cw½ ne se 22-13n-12w, mim.

SHELBY COUNTY—Breaseale's Richardson 1, cnw nw 35-12n-14w, sd 198 ft. Farrior's Smith 1, ne ne ne 1-12n-2e, lcn.

WARDS COUNTY—Schmidt's Strenne 1, ne nw ne 5-1n-14w, spd and sd. Leach Bros.' Lee 1, sw ne se 11-1s-10e, dr 3108 ft. Cotton's Leibke 1, ne ne sw 20-1n-14w, c&p.

WASHINGTON COUNTY — Bitterman's Jesse 1, cse ne 16-3s-2w, td 1075 ft, rng 6-in csg. Frost & Vickers' Frank 1, sw nw nw 28-1s-4w, sdo 937 ft.

WHITE COUNTY—Heldt's Hagley 1, sw ne sw 12-7s-9e, c&p. Hunt's Smith 1, 11-5s-8e, der.

KANSAS

BARBER COUNTY—Palmer's Warwick 1, cnw 29-21s-10w, dr 4600 ft. Carter & Wentz' Lytle 1, cne nw 6-32s-14w, dr 4515 ft.

BARTON CONTY—Price' Hammeke 1, ne ne sw 12-18s-12w, pb to 3429 ft, testing. Martin & Foraker's Dick 1, ne sw sw 31-19s-11w, mim and abd. Shell's Ehrlich 1, sw sw sw 1-16s-14w, dd to 3296 ft, 2800 ft oih. Day's Feltes 1, se se ne 14-16s-12w, sd 1875 ft. Murfin's Rexroot 1, nw nw se 14-17s-13w, spd. Crown Pet.'s Schartz 1, sw se nw 7-20s-11w, ur 10-in csg 2220 ft. Price' Wondra 1, nw nw ne 10-17s-13w, dr 330 ft. Sinclair Prairie's Frederick 1, sw sw se 16-16s-11w, dr 2863 ft. Silverstein & George's Otte 1, se se nw 2-19s-14w, br. Gear & Atlantic's Sullivan 1, ne se sw 29-17s-13w, mim.

BUTLER COUNTY—Steinbuchel's Fox 1, nw se ne 25-26s-3e, td 1010 ft, abd. Dustin's Miley 1,se nw ne 17-27s-5e, sg 582 ft. Saco, Kansas & Gulf's Pettit 1, sw nw sw 21-28s-6e, dr 1150 ft.

CHASE COUNTY—Duffy's Leedy 1, ne nw nw 26-22s-9e, sd 1515 ft.

CHAUTAUQUA COUNTY—Sooby's Davis 1, sw ne nw 29-33s-10e, sd 1504 ft.

CLARK COUNTY—Olson's Watkins 1, sw sw nw 23-32s-21w, dr 7136 ft.

COWLEY COUNTY—Brewer's McDaniels 1, sw sw sw 24-30s-4e, spd. Palmer's Neimaller 1, ne ne ne 14-30s-4e, td 2962 ft, abd. Brewer's Clark 1, ne se nw 6-31s-4e, td 2874 ft, testing. Wakefield's White 1, nw nw ne 4-33s-4e, dr 1953 ft. Milton's Milton 1, sw sw se 16-34s-5e, ponds. Bess & Gralapp's Hunt 1, cnl ne nw 18-34s-5e, spd.

EDWARDS COUNTY—Douglas & Gear's Meade 1, se se nw 35-25s-16w, sdo.

ELLIS COUNTY—Skiles' Jensen 1, sw se ne 26-12s-18w, sd 2910 ft. Duwe & Farris' Hadley 1, se ne se 12-11s-18w, dr cem 3146½ ft. Bradley's Jensen 1, nw nw se 36-11s-19w, show sulph wtr. Continental's Baumrucker 1, ne ne sw 25-14s-16w, dr 3030 ft. Helmerich & Payne's Stebbins 1, nw nw se 7-13s-20w, dr 3598 ft. Twin Drlg.'s Hall 1, nw sw ne 1-12s-17w, dr 1850 ft. Hays & Sackrider's Windholtz 1, ne ne ne 2-13s-16w, td 3150 ft, co. Western Kansas' Cole 1, ne se se 24-11s-20w, rig. Carter's Foster 1, se se nw 1-15s-16w, dr 2085 ft.

ELLSWORTH COUNTY—Colonial's Hogy 1, nw nw sw 16-16s-10w, td 3342 ft, Aw/1500 gals. Wixon's Peterman 1, sw sw sw 28-17s-10w, td 3306 ft, testing.

FINNEY COUNTY—Atlantic's Nunn 1, se se ne 27-21s-34w, dr 3040 ft.

FORD COUNTY—Sinclair Prairie's Young 1, csl ne 34-27s-21w, lcn.

GRAHAM COUNTY—Continental & Cities Service' Morel 1, cw¼ e½ ne 15-9s-21w, dr 2323 ft.

GRAY COUNTY—Reynolds' Watkins 1, csw 32-28s-28w, rot rig.

GREENWOOD COUNTY — Whittaker & Johnson's Cannon 1, cel se nw 8-26s-13e, rung 5-in csg. Whittaker's Bressner 1, nw nw se 8-26s-13e, dr 600 ft.

HARPER COUNTY—Franklin Drlg.'s Walts 1, ne ne sw 24-34s-6w, dr 4300 ft.

JACKSON COUNTY—Lemmick Oil's Marble Savings Bank 1, cne ne 26-9s-14e, sd 510 ft.

JEWELL COUNTY—Hollingsworth's Wolf 1, nw sw se 14-4s-8w, sd 100 ft.

LANE COUNTY—Phillips Pet.'s Kees 1, cse se 3-19s-30w, woc at 4911 ft.

McPHERSON COUNTY—Pulse' Boesker 1, se se nw 29-20s-1w, rig. Phillips Pet.'s Galle 1, nw nw ne 11-21s-2w, dr 3275 ft. Archer & Crane's Templin 1, nw sw se 32-17s-3w, td 3652 ft, abd. Darrah-Aurell's Decker 1, sw sw se 12-21s-2w, rust 2985 ft, dr cem.

MEADE COUNTY—Pacific Mid-West's Rexford 1, ne se sw 8-30s-29w, sd 200 ft. Barnett's Adams 1, sw sw ne 22-34s-30w, sd 69 ft. Bryan & West's Brown 1, ne ne sw 5-33s-27w, spd and sd.

NESS COUNTY—Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, co 3265 ft. Marshall's Anderson 1, sw sw nw 23-16s-24w, spd and sd. Trojan's Moses 1, csw nw 10-18s-25w, sd 500 ft.

OTTAWA COUNTY—Babcock's Copeman 1, cnw ne 18-10s-2w, pits.

PHILLIPS COUNTY—Davidson's Elliff 1, se ne ne 35-5s-18w, sd 600 ft.

PRATT COUNTY—Cities Service & Atlantic's Delaney 1, csl ne 13-26s-12w, dr 4070 ft.

RENO COUNTY—Schneider's Kroecker 1, ne ne ne 12-22s-5w, dr 3977 ft. Carey's McPheeters 1, ne ne nw 22-26s-8w, straight reaming 3665 ft. McCole's Mathews 1, sw nw nw 15-24s-10w, dr 2865 ft. Cities Service' Kreie 1, cnw 27-23s-10w, set 7-in csg 3894 ft, woc. Amerada & Westgate-Greenland's Johns 1, se se se 25-22s-2w, dr 1570 ft. Fould's Ehnen 1, csl se se 33-23s-9w, ponds.

RICE COUNTY—Price' Gemeinhardt 1, ne ne se 18-18s-10w, pb to 3298 ft, Aw/2000 gals, p. 2 bbls oil, 7 hrs. Schneider's Sterling College 1, se sw se 28-20s-2w, set 5-in csg 3460 ft.

ROOKS COUNTY—Producers' Ham 1, sw sw nw 25-7s-19w, sd 330 ft. Graham's Fike 1, sw sw sw 9-9s-17w, co 3384 ft. Witt & Sheridan's Morrison 1, nw se sw 29-10s-17w, rot rig. Elwell's Zimmerman 1, ne ne nw 15-9s-18w, td 3760 ft, abd. Duwe & Farris' Hancock 1, nw sw sw 21-10s-18w, td 3709 ft.

RUSSELL COUNTY—Emrich's Anderson 1, ne se sw 33-15s-11w, spd and abd. Parks' Gorham Est. 1, sw nw ne 19-15s-15w, dr 2025 ft. Jones' Kuhnle 1, se se nw 4-15s-12w, dr 2030 ft. Hess' Reinhardt 1, ne ne sw 36-12s-14w, td 3165 ft, abd. Smith & Unruh's Stielow 1, nw nw nw 32-11s-14w, sd 2254 ft. Atlantic's Boxberger 1, ne se nw 10-15s-14w, dr 1940 ft. Central Pet.'s Furthmeyer 1, se se se 22-14s-15w, mim. Gulf's Kaufman 1, ce½ sw sw 22-15s-12w, brr.

SEDGWICK COUNTY — Talbott's Down Est. 1, se se nw 32-28s-2e, testing. Union O&R's Howell 1, sw sw sw 6-29s-1e, woc 2410 ft. Hudson's Fulton 1, ne ne se 35-28s-1e, sd 1738 ft. McKnabb's Garrett 1, se sw sw 18-29s-1e, ur 8-in csg 2756 ft.

STAFFORD COUNTY—Terry & Feaster's Negley 1, sw sw ne 23-22s-12w, sd 3743 ft. Lindsay & Bailiere's Tiepermann 1, sw sw nw 32-22s-12w, dr 3663 ft. Cardinal & Carraker's Sittner 1, sw sw sw 4-22s-12w, td 3700 ft, abd. Knight's McNickle 1, se se ne 2-24s-11w, mim. Nat'l Ref. Co.'s Bonham 1, sw sw se 28-25s-12w, ur 7-in csg 4075 ft. Stanolind's Hahn 1, ne ne nw 14-22s-13w, td 3763 ft, 3400 ft oih. Rust's Krakenberg 1, sw sw sw 20-22s-12w, dr 3260 ft. Continental's Fair 1, cnl sw 12-25s-13w, dr 2600 ft. Pryor & Lockhart's DeSalms 1, ne ne ne 3-25s-11w, rot rig. Fain Drlg's Hughes 1, se se se 13-23s-12w, dr 3150 ft.

SUMNER COUNTY—Saco's Phipps 1, sw se ne 24-30s-1w, spd and abd. Jones' Stunkel 1, se se sw 2-30s-1w, rig abd. Shawver's Stewart 1, nw nw se 4-32s-3w, td 4569 ft, abd. Colonial's Miles 1, se ne ne 30-30s-4w, rot rig. Shawver, Pryor & Lockhart's McKowen 1, sw sw sw 18-32s-1w, rur 4600 ft. Murphy's Tate 1, se se nw 31-32s-2e, lcn.

TREGO COUNTY—Carlock's Kinzel 1, sw sw sw 9-13s-22w, spd and sd. Manning & Martin's Lynd 1, nw nw sw 16-11s-21w, dr 2891 ft.

WOODSON COUNTY—Reeser's Weide 1, nw nw se 18-25s-14e, sd 1150 ft. London & Mendenhall's Slough 1, ne ne sw 9-24s-13e, dr 2890 ft. Union Oil & Royalties' Laidlow 1, cel nw sw 35-25s-15e, td 1400 ft, made ½ bbl oil per hr.

NORTH LOUISIANA

BIENVILLE PARISH—Gulf's Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, dr 8985 ft, red and black shale, strks gray sand. DeSoto O&G Co.'s Wm. Ashley 3, c nw se 15-16n-10w, rog. Hunt-Seaboard's Hodge-Hunt 1, se nw 36-17n-6w, rog. Producers O&G Co.'s Lockett 1, ne ne 9-15n-10w, owdd, arr set csg and test so, td 2960 ft.

CADDO PARISH—Olson Drlg. Co. et al's Sharpe 1, c nw ne 10-18n-16w, elev 265 ft, base massive anhydrite 4687 ft, base stringer 4776 ft, running 7-in csg, td 6005 ft.

CATAHOULA PARISH—G. E. Foster et al's W. S. Peck 1, c s½ 39-10n-8e, 16-in csg 20 ft.

CLAIBORNE PARISH—Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, sdtr 9140 ft, old td 9964 ft. Weaver Oil Corp.'s Alex Edmonds 2, sw ne 16-20n-5w, spd arr set 9⅝ in csg 1200 ft.

CONCORDIA PARISH—Edw. A. Addey's Pasternach 1, c nw sw 49-8n-9e, woc 480 ft.

DE SOTO PARISH—Clear Lake Oil Co.'s Woolums 1, nw nw 29-12n-12w, cored sand so, arr set csg, td 2694 ft. La. Seaboard's Lawrence 1, sw ne 36-12n-14w, woc surf csg. S. S. Alexander's Stell 1, 5-12n-16w, co, td 6002 ft.

FRANKLIN PARISH—Southern Star Pet. Co.'s Grayson 2, sw ne 36-12n-6e, sd 1755 ft.

GRANT PARISH—C. L. Thompson's Woodard 1, ne sw 10-6n-3w, spd woc surf csg.

LINCOLN PARISH—E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, elev 199 ft, formation shot twice at 5932-41 ft, acidized, swabbing intermittently, td 6260 ft.

MADISON PARISH—Continental Oil Co.'s Singer Mfg. Co. 1, c ne ne 3-15n-11e, mim.

MOREHOUSE PARISH—Hunter & Rowe's (formerly W. J. Furlong, Jr.) E. M. Clark 1, 10-20n-7e, elev 103 ft, top lime 6218 ft, dr 6640 ft, black lime.

NATCHITOCHES PARISH—Joe E. Popkins' Peavy-Wilson Lbr. Co. 1, nwc 36-7n-9w, rur.

RAPIDES PARISH—Amerada's Weil 4, 53-1s-2e, so at 6703 ft, tried 2 unsuccessful drill stem tests, trying again, td 6728 ft.

RED RIVER PARISH—Glassell & Whitehurst's LaLong 1, ne nw ne 25-12n-11w, sd 1810 ft.

SABINE PARISH — W. L. McClanahan's Frost-Johnson 1, 22-9n-13w, lcn (5700 ft test). J. G. Sutton Oil Co. et al's Sabine Lbr. Co. 1, se nw ne 23-7n-14w, 9⅝ in csg 2132 ft, tested 1200 ft oil in 9 min drill stem test, 3841-53 ft, 7-in csg 3840 ft, flowed oil and wash water several hours, killed, drilled one ft deeper, swabbing with intermittent heads, td 3854 ft (Washita).

TENSAS PARISH — H. B. Schumacher's Mounds Land Co. 4, 39-11n-12e, rur.

UNION PARISH—Joe Modisett et al's Frost Lbr. Co. 1, ne sw 14-21n-1e, elev 188 ft, top Travis Peak 4050 ft, top lower Marine 6161 ft, dr 7890 ft.

WEBSTER PARISH — Magnolia's Frank Sexton 1, c sw ne 32-23n-9w, elev 225 ft 13⅜ in csg 838 ft, top first anhydrite stringer 4175 ft, top massive anhydrite 4348 ft, top Travis Peak 5701 ft, 9⅝ in csg 6838 ft, top lower Marine 7605 ft, dr 8246 ft.

WINN PARISH—G. W. Zeigen's La. Cent. Lbr. Co. 13, 4-13n-1e, woc surf csg 63 ft.

SOUTH LOUISIANA

ACADIA PARISH—Humble's Boyd Finch 1, South Crowley prospect, 22-10s-1e, coring sand 9098 ft.

ALLEN PARISH—Humble's Bel 3, Bel prospect, 28-6s-7w, no report.

AVOYELLES PARISH—G. C. Koch's Kelone 1, Marksville area, 21-2n-3e, fsh 1163 ft.

CALCASIEU PARISH — Shell's Calcasieu National Bank 1, Hayes area, 18-11s-5w, coring sand and shale 9087 ft. Sun's Lutcher Moore 1, Northwest Starks prospect, 1-8s-13w, woc 2030 ft.

BEAUREGARD PARISH — Republic's Lutcher Moore 1, Bancroft area, 10-6s-13w, coring shale 4209 ft.

CAMERON PARISH — Humble's Miani Corp. 1-B, Little Cheniers area, 7-14s-6w, coring shale 8618 ft. Superior's State 1, in Gulf of Mexico, 15s-8w, testing 5182 ft.

EAST BATON ROUGE PARISH—Austin B. Taylor's Duplantier 1, University Block prospect, 65-7s-1w, woc 6477 ft.

IBERIA PARISH—Texas Co.'s State 4, Fausse Point area, 35-11s-8e, coring sand and shale 8545 ft; same operator's Bayless & Jones 1, e flank of Jefferson Island, 58-12s-5e, dr shale 4109 ft; same operator's State 2-B, in Vermilion Bay, 16s-5e, woc 7170 ft.

JEFFERSON PARISH—Julius Szodamka's Carroll 1, n of New Orleans, 125-12s-11e, dr shale 1550 ft.

JEFFERSON DAVIS PARISH—Stanolind's W. B. Conover 1, South Welsh prospect, 20-9s-5w, coring shale 6700 ft. Union Sulphur's Calcasieu National Bank 1, Woodlawn area, 12-9s-6w, coring shale 7609 ft.

LAFAYETTE PARISH—Continental's Foreman 1, South Scott area, 36-9s-3e, dr shale 8778 ft.

ST. BERNARD PARISH—Gulf's State RR 3, Lake Borgne area, 6-12s-15e, ru.

ST. LANDRY PARISH—Moxon & Toomb's Boagni 1, Opelousas area, 41-6s-4e, ru.

ST. MARTIN PARISH—Carter, Stewart et al's Martin 2, Section 28, 32-9s-7e, abn 4526 ft in salt. Shell-Tide Water's Unit 1, West Lake Verrett area, 11-14s-12e, coring shale and lime 9269 ft. Texas Co.'s St. Martin Land 11, Henderson area, 21-8s-7e, lcn; same operator's State 4, Lake Mongoulois area, 14-10s-9e, abn salt 7988 ft.

ST. MARY PARISH—Petroleum Heat & Power Co.'s Parro 1, nw of Charenton, 9-13s-9e, abn 3009 ft.

TERREBONNE PARISH—Fohs Oil Co.'s Buckley 1, Dulac area, 77-19s-17e, dr shale 9309 ft; same operator's State 1, La Terre area, 41-19s-19e, dr shale 8302 ft.

MONTANA

BLAINE COUNTY—Burton & Hole's Waldrip 1, csw nw 12-32n-17e, dr 600 ft. Claggett shale.

CARBON COUNTY—R. C. Tarrant's Fee 2, s nw 14-6s-19e, fsg 1400 ft.

FERGUS COUNTY — Flathead Lewistown Co.'s Fee 1, cne ne 13-15n-18e, abd 1500 ft. Judith Operating Co.'s Fee 2, w nw ne 35-22n-17e, abd 3180 ft. Baughman & Singley's Skaggs 1, cnw sw 7-15n-20e, dr 525 ft. Quadrant lime.

JUDITH BASIN COUNTY—Fletcher P. Hunt's Hobson 3, nw se ne 30-14n-15e, dr 1810 ft.

LEWIS & CLARK COUNTY—Wm. Hanlon et al's Fee 1, cne nw 11-18n-5w, dr 2350 ft.

PARK COUNTY—Ben W. Ryan's Burgess 1, se sw nw 28-2s-11e, dr 1250 ft.

TOOLE COUNTY — Montana Gas Corp.'s Clark 2, cse sw 24-37-1w, cmt 5 in csg 2370 ft.

MICHIGAN

ALLEGAN COUNTY—Eureka Dev. Co.'s Widenfeller 1, 29-4n-12w, swabbed 160 bbls oil two days, acidized, flowed 90 bbls oil 2½ hours, testing, Traverse lime 1610 ft, td 1615 ft. Robt. C. Lentz's Allek 1, 33-4n-12w, 6-in 1600 ft, dr 1630 ft, so&w. S. B. Hood's Wright 1, 9-3n-13w, csd 5-in 1576 ft, swab and flow 410 bbls oil 18 hours, testing, td 1610 ft, Upper Traverse 1608 ft. Crystal Syndicate's Jewell 1, 3-4n-12w, dr 810 ft. Wayland Syndicate's Kline 1, n wsw se 10-3n-11w, mim.

BAY COUNTY—C. W. Teater's Goodman 1, 28-18n-3e, Dundee 2966 ft, dr 2991 ft.

CALAHOUN COUNTY—Verona Crude Oil Co.'s Fruin 1, 29-1s-7w, driving 14-inch 59 ft. Mar Cal Dev.'s Woods 1, 13-2s-6w, rig.

CLARE COUNTY—Gulf's Doherty 1, sw sw sw, 25-17n-4w, dr 609 ft. Big Basin Oil & Gas Co.'s Murphey 1, 26-17n-3w, sd 1569 ft.

GLADWIN COUNTY—W. E. Ross' Kinyon 1, 18-18n-2e, sd 3140 ft. McClanahan Oil Co.'s Sharp 1, 9-19n-2w, dr 1368 ft. Franklin Pet. Corp.'s State 1, 8-19n-2e, dr 2900 ft.

INGHAM COUNTY—Darke Brothers' O'Sullivan 1, 28-2n-1w, rig.

ISABELLA COUNTY—Bell Marks, Inc.'s Fox 1, 5-13n-5w, dr 900 ft. J. V. Wicklund's Lawens 4, 24-15n-5w, dr 3469 ft. J. Zabel's Kennedy 1, 25-14n-4w, dr 3700 ft.

KENT COUNTY—Gulf's Baker 1, 35-9n-11w, rig.

MECOSTA COUNTY—Jetter Drilling Co.'s Deakins 1, 28-13n-7w, sd 1150 ft. Mitchell Oil & Gas Co.'s Blodgett 1, 22-13n-10w, dr 1400 ft.

MIDLAND COUNTY—Sun's State A-1, 5-16n-1w, testing so 3860 ft; State Jerome A-1, 3-15n-1w, 8-inch 900 ft.

MONTCALM COUNTY—Socony Vacuum's Hansen 1, 22-12n-6w, testing gas pay, 1319 ft. Hirzel-Leland's Hansen 1, 31-10n-7w, dr 1880 ft. H. L. Gentry's Christensen 1, 29-11n-8w, dr 2500 ft.

NEWAYGO COUNTY—Muskegon Development Co.'s Carey 1, 35-14n-11w, loc. Gulf Refining Co.'s Walker 1, 25-13n-13w, dr 110 ft.

TUSCOLA COUNTY—Norton et al's Sharp 1, 30-14n-8w, dr 310 ft.

WEXFORD COUNTY — G. H. Schrack's Fee 12, 17-22n-9w, sd 3004 ft.

NEBRASKA

LINCOLN COUNTY — Smith & Wright's Hansen 1, csw nw 24-15n-31w, dr 2880 ft.

OKLAHOMA

ATOKA COUNTY—Sheldon & Gardner Pet.'s Lee 1, ne nw sw 2-4s-10e, sd 2416 ft. Stanolind & Amerada's Ridgway 1, nw ne ne 24-3s-9e, td 2757 ft; rng 8¼-in csg.

BECKHAM COUNTY—Mid-American's Biscoe 1-A, sw sw sw 28-8n-22w, dr 2692 ft.

CARTER COUNTY—Lloyd & Noble's Revelle 1, sw sw se 21-3s-2w, td 4028 ft; sdo. The Texas Co.'s Cathay 1 "B," se ne ne 6-5s-1w (owdd—otd 4559 ft) pulled 7-in csg; co.

CLEVELAND COUNTY—Harper & Turner's Pollock 1, cw/2 nw nw 13-9n-2w, td 7590 ft, abd. Hollenback's Mantooth 1, nw nw nw 24-6n-1e, rig. Delaney's Bugher 1, se se sw 12-7n-2w, rur.

CHOCTAW COUNTY—Chapman & Lowe's Hallum 1, nw nw ne 4-7s-20e, sd 813 ft. Ross' Hardy 1, se se nw 21-7s-15e, mim.

COMANCHE COUNTY—Wolf's Costinus 1, sw sw se 30-4n-11w, spd. Scott's Kuntz 1-A, se ne se 27-4n-11w, sd 2800 ft. Roach's Green 1-A, se se sw 2-1n-13w, dr 590 ft.

COTTON COUNTY—W & P Oil's Worsham 1, nw nw se 15-4s-10w, lcn. Turner's Collins 1-A, sw ne ne 18-4s-10w, td 1305 ft, abd.

GARFIELD COUNTY — Waukomis Oil's Clark 1-A, nw nw nw 34-21n-6w, td 7336 ft; flow by heads, 408 bbls oil, 24 hrs; to acidize.

GARVIN COUNTY—Edwards' Clark 1, ne ne ne 16-3n-3e, pb to 2090 ft; rust.

GRADY COUNTY—Gulf's Thomas 1, sw nw nw 14-4n-5w, dr 11,015 ft. Doyle's Huffine 1, nw nw se 30-5n-8w, der.

GREER COUNTY—Medlin's Broudie 1, nw nw nw 5-6n-20w, sd 90 ft. McDonald's Fite 1, se se nw 34-7n-21w, dr 1075 ft. Gauntt & Baker's Parks 1, nw nw sw 29-7n-20w, sd 720 ft. Everitt's Graumann 1, ne nw nw 11-5n-21w, sd for csg at 140 ft.

HUGHES COUNTY—Phillips Pet's Beeker 1, ne nw sw 8-5n-10e, pb to 5760 ft; rust. Doup's Bank 1, ne ne nw 7-7n-9e, fsg 335 ft. Rives' Hawthorne 1, sw sw se 19-7n-10e, lcn. Phillaine's Morrison 1, se se sw 13-9n-10e, td 150 ft; wo tools. Amerada & Stanolind's Preame 1, nw nw se 29-9n-9e, td 3384 ft; no show. Moore's Hunter 1, ne ne nw 30-4n-9e, dr 2005 ft. Marbett Oil's Breeding 1, ne sw ne 12-7n-8e, co 1094 ft. Amerada & Stanolind's Martin 1, nw ne ne 6-9n-9e, td 1936 ft.

JEFFERSON COUNTY—Massad & Swainsberger's Barrett 1, ne se se 14-6s-6w, sd 1890 ft. Weir's Hayes 1, se se nw 23-7s-7w, der.

KAY COUNTY—Shaffer's McKee 1, ne ne nw 20-28n-1w, sd 2500 ft. Shaffer's Rudolph 1, ne ne sw 27-29n-1w, cel. Nye's Willin 1, se se sw 24-27n-4e, C & P. Pierce's Hannan 1, se se se 26-28n-2e, dr 1550 ft.

KIOWA COUNTY—Hughes & Reese' Fultz 1, se se se 10-6n-18w, sd 1238 ft.

LINCOLN COUNTY—Wilcox's Royer 1, se se ne 18-14n-6e, td 3372 ft; shot w/170 qts; co. Stanolind & Amerada's Strader 1, nw nw ne 8-13n-3e, dr 4863 ft. Wilcox's Evans 1, sw sw nw 21-14n-6e, rur.

LOGAN COUNTY—The Texas Co.'s Roper 1, cw/2 sw se 22-15n-1e, td 5542 ft; sdo. Arrow Drlg's Dobson 1, nw nw nw 23-17n-1w, td 5385 ft, abd. Carter's Lydick 1, ce/2 nw ne 23-15n-4w, dr 1710 ft. Sinclair Prairie's Crews 1, sw sw ne 27-16n-1e, lcn.

LOVE COUNTY—Sinclair Prairie's Peabody 1, ne ne ne 35-6s-2w, dr 3177 ft.

MURRAY COUNTY—Owens' Gryer 1, ne se ne 34-1s-3e, dr 2685 ft.

MUSKOGEE COUNTY—Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft. Heydrick's Nolby 1, cne 22-13n-19e, dr 630 ft.

OKFUSKEE COUNTY—Burke-Greis' Capps 1, se se se 7-13n-7e, mit.

OKMULGEE COUNTY — Bryan Pet.'s Thompson 1, cse ne ne 8-15n-11e, dr 900 ft.

OSAGE COUNTY—Norbla's Osage 1, se se se 18-25n-7e, lcn.

PAWNEE COUNTY—Ross & Patterson's Morhain Heirs 1, ne ne nw 30-22n-7e, rig.

PAYNE COUNTY—Maradun Oil's Moore 1, se sw nw 17-18n-1e, dr 749 ft. Helmerich & Payne's Ritchey 1, cne nw 34-18n-1e, td 5353 ft, abd.

PONTOTOC COUNTY—Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, sd 3320 ft. Lee's Weatherby 1, nw se nw 24-1n-7e, dr 785 ft. Cowley's McCormich 1, sw sw se 29-2n-4e, sd 275 ft. Delaney's Perrine 1, se nw nw 27-5n-5e, spd and sd. Calama Oil's Brentz 1, se ne sw 4-1n-6e, rur. Conley Drlg.'s Fleming 1-A, sw se se 12-5n-4e, bail to 1200 ft; sso & g; co.

POTTAWATOMIE COUNTY—Hall & O'Mara's Show 1, ne ne se 32-6n-5e, td 3346 ft; rust. Davis' Jones 1, nw ne sw 34-6n-5e, td 2314 ft; pb & woc.

ROGER MILLS COUNTY—Central Pet.'s Lambe 1, se se se 27-14s-21w, rig corners.

SEMINOLE COUNTY—Woodson & Maradun's Gilliland 1, se se sw 24-11n-7e, td 4295 ft; hfw; to dr to Wx sand. Pine's Wright 1-A, se se ne 16-6n-6e, dr 2530 ft.

STEPHENS COUNTY—Coline Oil's Johnson 1, sw se ne 1-2n-8w, fsg 9086 ft. Helmerich & Payne's Moursberger 1, cs/2 sw se 29-2n-8w, dr 4142 ft.

TEXAS COUNTY—Hagey's Peck 1, cne/4 6-1n-13ecm, sd 2842 ft. Hardendorf & Kuhn's Wiggin 1, c nw¼ 1-2n-14ecm, td 2510 ft, rust. Hardendorf & Kuhn's Wiggin 2, cne¼ 2-2n-14ecm, lcn.

TILLMAN COUNTY—Gibson-Jennings' Burleson 1, se se sw 35-2s-19w, dr 1585 ft. Schoonover's Loftis 1, nw nw se 19-2s-18w, lcn abd. Martin's Parris 1, nw nw sw 3-3s-19w, dr 2930 ft. Grimes' Laney 1, nw nw nw 3-3s-18w, td 4020 ft, abd. Grimes' Hall 1, sw ne sw 12-3s-19w, lcn.

TULSA COUNTY—North's Neibig 1, ne nw nw 31-19n-14e, dr 1908 ft.

WASHITA COUNTY—McWhirter's Fee 1, nw sw sw 34-8n-19w, dr 2060 ft.

SOUTH TEXAS

BASTROP COUNTY — Collins' Lofton 1, Denson sur, abnd 2002 ft. Franklin's Thaxton & Yarrington 2, Bangs sur, sd 110 ft. Western Gulf's Pitkin 1, Wells sur, ru.

BEXAR COUNTY—Walkowiak's Peterson 1, Virm sur, dr 1100 ft. Fair's Goode 1, Pickins sur, sp. Harrison, Fain & Smith's Schuwirth 1, sur 2, sd 1034 ft. Hickok & Reynolds' Ewert 1, York sur, dr 2608 ft. Noake's Oppenheimer 1, Miller sur, dr 170 ft. Philtop's Cassin 1, Rodriguez sur, testing, Austin ch 1176-89 ft, 7 in csg 1168 ft.

BURLESON COUNTY—Red Banks Coffield 1, Santef sur, dr 950 ft.

CALDWELL COUNTY—Richards' Sohne 1,

PRACTICAL PETROLEUM ENGINEERS' HANDBOOK

By
JOSEPH ZABA,
E. M. M. Sc.
Petroleum Engineer
Rio Bravo Oil Company
and
W. T. DOHERTY
Division Superintendent,
Humble Oil & Refining Company

For a number of years there has been a growing demand for a handbook containing formulae and other practical information for the benefit of the man working in the production and drilling branches of the oil industry. So great has been this need that many engineers have tried to accumulate their own handbooks by clipping tables, formulae and figures from scores of sources.

The co-authors of this volume discovered by coincidence that each had been for a period of several years accumulating practical data which through their collaboration appears in this book. Both of them are men who have not only received theoretical training but who have had many years of practical experience as engineers in dealing with every day oil field drilling and production problems.

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EDWARDS COUNTY—Auld's Henderson 1, sec 46, set 6⅝ in at 3987 ft. Evans & Love's Brown 1, sec 66, sd 5845 ft.

FRIO COUNTY—Pagenkopf & Jamieson's Houston 1, Figuerroa sur, testing on pump, td 2651 ft.

GUADALUPE COUNTY—Hearn's Rudelow 1, Clements sur, sd 740 ft. Kallison's Ranft 1, Burnham sur, coring 2550 ft. Riddle's Weber 1 (second hole), Torres sur, stdg 452 ft. Spiller's Wright 1, Cottle sur, dr 2055 ft. Straser's Eickenroth 1, Esnaurrizer sur, ru and sd.

KERR COUNTY—Edmiston's Saul 1, sur 47, dr 55 ft.

MAVERICK COUNTY—Wellington's Chittim 1, sec 129, dr 5200 ft; Chittim A-1, dr 3000 ft.

MEDINA COUNTY—Cromwell's Tondrie 1, Rogers sur, dr 150 ft. Trentman & Merrit's Carle 1, sur 72½, cor 1779 ft.

MILAM COUNTY — Tuxedo's Graham 1, Cronea sur, sd 1560 ft, in lime; Graves 1, Robertson, wocs, 1172 ft.

REAL COUNTY—Smith's Love 1, sec 5, mim.

TRAVIS COUNTY—Smith's Morell 1, Winburn sur, sd 984 ft.

VAL VERDE COUNTY—Jones' Sellers 1, I&GN sur, lcn.

LAREDO DISTRICT

DUVAL COUNTY—Argo's Bolte 1, sec 18, dr 3320 ft. Atlantic's Gravis 1, sur 88, dr below 5100 ft. Conroe's Trevino 1, lot 16, sur 1, dr 1300 ft. Corpus Christi & Taylor's Parr 1, sec 303, lcn. Gravis' Megerle 1, sur 245, dr abt 1000 ft. Kirby's DCRC 1, sec 52, lcn. Magnolia's DCRC 1, sec 87, lcn. Magnolia's Hoffman 1, sur 111, dr 2110 ft. Petroleum Producers' Worden & Drought 2 (1-B), sec 162, wocs, 40 ft. Rowan & Hope's Gravis 1, sec 90, dk, wor. Sun's Ross 1, sur 73, lcn. Wright's Hyatt 1, sec 6, lcn.

STARR COUNTY—Borah's Garcia 1, por 71, dr 295 ft. Collins' Guerra 1, sh 20, blew out, running wild, td 6609 ft. Sun's M. Guerra D-2, La Sacatosa gr, dr below 1520 ft.

WEBB COUNTY—Bonner's Lewis 1, sur 460, lcn. Hill's Adami 1, sur 345, cor 1020 ft.

ZAPATA COUNTY—Bryant's Flores 1, dr 425 ft. Falcon's Yzaguirre 1, por 14, dr 2220 ft. Tomkins' Gutierrez 1, India gr, dr 1200 ft.

CORPUS CHRISTI DISTRICT

BEE COUNTY—Dougherty's Beck 1, blk 9, td 3721 ft, swabbed down, showed some o&g. Luling's Page 1, Hadley sur, ru. Union's Ray 55, Kerr sur, dr 3225 ft.

DE WITT COUNTY — Hines' Boothe 1, Swindle sur, sd 2022 ft. Howeth's Fuhrken 1, Walton sur, lcn.

GOLIAD COUNTY—DeArman & Winward's Drier 1, sur 7, still running wild, td 5535 ft.

HIDALGO COUNTY—Gulf States' Cardenas 1, Tule gr, dr 4825 ft. Johnson's Daskam 1, blk 33, dr below 1400 ft. Morton's Guerra 1-A, sh 12, por 41, wocs, 235 ft. Sun's Bostedt 1, blk 16, dr below 4500 ft.

JACKSON COUNTY — Adams' Foust 1, White sur, ran electrical logging device sd, woo, may set csg to test 2650 ft sand, td 5165 ft. Harrison's Wearden 1, Williams sur, dr 2974 ft. Magnolia's West 1, Musquiz sur, dr 8120 ft.

JIM WELLS COUNTY—Callaway's Garcia 1, sur 62, sp. Howell's Lindsay & Reed 1, La Vaca gr, dr below 600 ft. Magnolia's Seeligson 1, Los Jaboncillos gr, cor below 6307 ft. Pressnal & Mosser's Mortgage 1, La Vaca gr, wocs, 651 ft. Smith & Story's Adams 1, sec 22, dr 2700 ft.

LIVE OAK COUNTY—Culton's Wedding 2, Haughy sur, sd 2805 ft. H. & H.'s Nichols 2, Henry sur, ps. Hickok & Reynolds' Land Bank 1, Henry sur, dr below 1700 ft. Holland's West 2, Ragland sur, mir. Martin's Adams 1, sec 25, still sd, 965 ft. Newton's West 1, sur 129, cor 1812 ft. Richardson & Karotkin's Poppe 1, sec 148, dr below 100 ft. V. G. Schimmel's West 1 (was Hanthe-Nelson, Inc.'s 1), sur 59, prep mim to dd, td 256 ft. Unit's Terrell 1, O'Boyle sur, sp. Wilson's Great American Life 1, sec 47, dr below 1150 ft.

NUECES COUNTY—Conroe's Morgan 1, sur 413, wocs, 868 ft. Coastline's State 1, tr 314, wor. Corpus Christi's Howington 1, sur 156, reaming 5058 ft. Morgan's Fee 1, sur 411, cor 5800 ft. Renwar's Kenedy 1, sur 420, dr below 1400 ft. Richardson's Badwin 2, blk 5, Russell Farm lots, dr below 5212 ft; Cowles 1, sec 43, no rept, td around 7500 ft. Rutherford's McKinzie 1, sur 422, dr 3625 ft. Seaboard's Luby 7, sec 1, sh 2, sp. Southern Minerals' French 1, sur 417, dr below 2000 ft. Texon's Horne 1, Palo Alto gr, perf 6275-92 ft, testing. Union's Brown 1, sec 87, wocs, 4225 ft; Perkins 1, sec 32, perf 4830-50 ft, testing gas and gasoline, ¼-in ch; Rivers 1, Palo Alto gr, dr 7079 ft; Wellington & Seaboard's Dugger 1, sec 125, perf 5340-67 ft, testing.

REFUGIO COUNTY—Barnsdall & Transwestern's Fagan 1, Fagan sur, cor 5571 ft. Hogan's Kelly 2, Power sur, stdg 5660 ft. Porter's Lambert 1, Power & Hewitson sur, mim.

SAN PATRICIO COUNTY—Brown's White Point 1, sur 5, pits dug. Burton's Owen 1, sec 62, lcn. Humble's Smith & Talbert 1, sec 37, dk. Smith's French-Shares 1, sec 65, cor 4952 ft.

VICTORIA COUNTY — Portilla's Welder D-1, sur 3, dr 4762 ft. Stanolind's Vandenberg 1, Benavides sur, wocs, 6510 ft. Superior's Carroll 1, Johnson sur, wocs 855 ft.

WILLACY COUNTY — Magnolia's Armendiaz 1, Carricitos gr, reaming below 7510 ft, td 9641 ft. Sal Vieja's Garcia 2, sh 59, cor below 6950 ft.

WEST TEXAS

(This report is confined to the north portion of the Permian basin).

ANDREWS COUNTY — Seaboard O&G Corp.'s Munger-Nix 1, c ne¼ PSL sec 1, blk A-41, elev 3250 ft, top anhydrite 1704 ft, bad hole pb fr 1740 to 311 ft, top Yates 2850 ft, top solid lime 4270 ft, used 10,000 gals acid at 4526 ft, testing; Thornberry 1, c ne PSL sec 8, blk A-42, cem cas 168 ft. Rogers & Rogers (was O. S. Black et al's) O. B. Holt-Sun 1, c nw nw PSL sec D, blk 43, elev 3127 ft, top anhydrite 1795 ft, top Yates 2970 ft, top solid lime 4225 ft, shot 60 qts nitro 4528-41 ft, testing. H. C. Wheeler & E. M. Wahlenmaier's F. E. Gardner 1, c sw sw PSL sec 15, blk A-35, elev 3177 ft, dr 1845 ft. Walter J. Donnelly et al's University-Humble 1, c nw se sec 16, blk 14, sd 190 ft. H. S. Forgeron et al's Lockhart-Brown 1, c ne ne PSL sec 20, blk A-41, rur. Frank S. Perkins et al (was American Liberty Oil Co.'s) E. P. Cowden 1, c ne nw PSL sec 14, blk A-55, elev 3114 ft, top anhydrite 1162 ft, salt 1250-2530 ft, top brown lime 2630 ft, top Yates 2710 ft, dr 5895 ft.

BAILEY COUNTY—Geo. Etz et al's I. C. Enochs 1, c labor 66, league 182, Floyd C.S.L. sur, elev 3788 ft, top lime 3173 ft, salt water in lime 4139 ft, sidetracking lost bailer.

COCHRAN COUNTY—Geo. P. Livermore et al (was J. R. Meeker's) Mrs. D. Slaughter Wright 1, NWc sw¼ labor 26, league 96, Mills C.S.L. sur, elev 3774 ft, top anhydrite 2330 ft, top lime 4105 ft, first oil saturation 4865-87 ft, tested 75 percent salt w at 4997 ft, pb to 4987 ft, used 3000 and 8000 gals acid, testing. Honolulu Oil Corp.-Cascade & Devonian's T. B. Duggan 2, labor 13, league 55, Oldham CSL sur, dr 4590 ft. The Texas Co.'s Mallett Land & Cattle Co. 1, near NEc PSL sec 7, blk G, dr 2790 ft.

FLOYD COUNTY — Mills Bennett Prod. Co.'s Thos. Montgomery 1, NEc F. J. Latham sur No. 2, A-520, elev 3129 ft, top lime 3255 ft, dr by stem, td 5082 ft.

GAINES COUNTY—Amerada Pet. Corp.'s J. B. Robertson 1, c sw sw W. T. Ry. sec 196, blk G, elev 3344 ft, top anhydrite 2113 ft, base salt 3092 ft, pay 5104-12 ft, used 3000 gals acid, dr by tools to 5100 ft, sd for 5000 gals acid. Amon G. Carter et al's W. M. Moore 1, NEc nw PSL sec 45, blk AX, dr 1500 ft; Moore 2, near c n½ n½ nw sec 45, rig. Eastland Oil Co. et al's Dunbar-Stanolind, ne ne sw PSL sec 24, blk A-12, cem sur pipe. M. K. B. Drl. Co. et al's A. L. Wasson 1, SEc ne PSL sec 52, blk AX, mim. Ohio Oil Co.'s S. J. Averitt 2, c sw ne W. T. Ry. sec 228, blk G, elev 3350 ft, used 2000 gals acid at 5030-89 ft, flowed 953 bbls initial. Shell Pet. Corp.'s G. N. Robertson 1, NWc ne sec 344, blk G, elev 3522 ft, top anhydrite 2210 ft, top brown lime between 4160 and 4180 ft, dr 5110 ft. Continental Oil Co.'s W. M. Moore 1-45, nwc e½ PSL sec 45, blk AX, dr 4910 ft.

GARZA COUNTY—Gulf Oil Corp.'s S. P. Swenson Cattle Co. 1, c nw H&GN Ry. sec 25, blk 2, Ordovician test, elev 2274 ft, cem 10¾-in pipe 1760 ft, td 1830 ft. M. L. Richards et al's K. Stoker 1, NWc GH&H Ry. sec 33, blk 5, dr 1115 ft.

HOCKLEY COUNTY—Gulf Oil Corp.'s M. G. Gordon 1, NWc PSL sec 12, blk X, elev 3511 ft, top anhydrite 2261 ft, top brown lime 3850 ft, top solid lime 4170 ft, pay 4970-5004 ft, 1650 ft fluid in hole, 1½ percent water; Mallett Land & Cattle Co. 1, NEc PSL sec 6, blk X, elev 3552 ft, top anhydrite 2220 ft, top brown lime 3860 ft, top solid lime 4200 ft, dr 4950 ft. Honolulu Oil Corp.'s Alex Slaughter 1-51, near SWc labor 51, league 37, Zavalla C.S.L. sur, top anhydrite 2190 ft, top Yates 2800 ft, top solid lime 4140 ft, pay 4949-4973 ft, flowed 224 bbls oil natural 21½ hrs, sd for acid; Alex Slaughter 1-77, labor 77, league 37, Zavalla C.S.L. sur, dr 2950 ft. Richardson Oils, Inc.'s Slaughter 1, SWc labor 59, league 39, Maverick C.S.L. sur, elev 3547 ft, top anhydrite 2140 ft, top lime 4120 ft, lime pay 4917-94 ft, shot 380 qts 4895-4989 ft, flowed 429 bbls initial on choke.

KENT COUNTY—Thad A. Bryant, Jr. et al's Haggins 1, c nw ne H&GN Ry. sec 118, blk 1, 3 mi nw Girard, dk; A. A. House 1, c ne PSL sec 10, blk B, dk. B. Dolman et al's C. V. O'Keefe 1, ne ne nw H&GN sec 50, blk 1, lcn.

LAMB COUNTY—Toddie L. Wynne, Tr.'s A. Neunschwander 1, 660 ft out of SEc labor 1, league 660, State Sapitol Lands, elev 3606 ft, top anhydrite 1712 ft, dry and abd 5503 ft.

LYNN COUNTY—John L. Baldridge et al's Alamo Lumber Co. 1, ne sw sw HE&WT sec 151, 6 mi w New Home, elev 3267 ft, top anhydrite 2130 ft, sd 4415 ft.

TERRY COUNTY — C. H. Hutto et al's Brownfield 1, near c of EL & Ry. sec 6, blk A-1, sd 670 ft. L. E. Hults et al's Ross-Gulf 1, SWc nw C&M sec 6, blk D-14, mim.

YOAKUM COUNTY—J. L. Crump & Black Bros.' Bennett 1, SWc e½ sw¼ sec 631, blk D, elev 3568 ft, rig. Bohago Oil Corp.-Bond Oil Corp.'s J. L. West 1, SEc sec 607, blk D, elev 3664 ft, top anhydrite 2275 ft, sd 5393 ft. Denver Producing & Ref. Co.'s J. A. Whittenburg 4, c nw ne sec 831, blk D, elev 3623 ft, used 5500 gals acid in pay 4870-5055 ft, flowed 688 bbls initial; Whittenburg 7, near c sw nw sec 831, rig; Whittenburg 6, c se se sec 799, dr 2970 ft; J. A. Whittenburg 3-A, c se nw sec 830, pay 4774-5060 ft, sd for acid. Eastland Oil Co.'s A. B. Chandler 1, c se se sec 767, rur. Gulf Oil Corp.'s J. C. Futch 1, nw se se sec 796, blk D, elev 3635 ft, top anhydrite 2175 ft, coring pay 5019 ft; S. J. Dixon 1, sw se se sec 609, elev 3638 ft, top anhydrite 2370 ft; top Yates 3100 ft, tested mostly water at 5371 ft, sd for acid. Gulf States Oil Co.'s E. A. Graham-Gulf 1, near c s½ sw sec 267, blk D, lcn. Honolulu Oil Corp.'s Bennett 4, SEc sec 677, blk D, lcn. Honolulu Oil Corp.-Cascade Pet. Co.'s Bennett 2, NWc ne¼ sec 678, top anhydrite 2410 ft, top Yates 3203 ft, testing 5272 ft; Bennett 3, SWc ne¼ sec 678, dr 5020 ft. Humble's Abilene State Bank 1, SEc PSL sec 37, blk AX, elev —— ft, pay 4850-5005 ft, used 1500 gas acid, flowed 328 bbls 34.6° oil initial; J. H. Lynn 1, c se se sec 798, blk D, td 5095 ft, used 1500 gals acid, sd to re-acidize. Magnolia's J. D. Webb 1, SWc ne sec 477, blk D, elev 3699 ft, top anhydrite 2370 ft, dr 4290 ft. Mid-Continent Pet. Corp.'s Bennett 1, NWc sw sec 678, blk D, elev 3536 ft, top anhydrite 2370 ft, pay 5050-5240 ft, shot 610 qts nitro, 1424 bbls initial; Bennett 2, near c w½ w½ sw sec 678, top anhydrite 2360 ft, 5236 ft, testing J. W. Murchison-L. Fikes' C. A. Elliott 2, c se ne sec 832, blk D, dr 3815 ft. Ohio Oil Co.'s Fairman 1, c se se sec 797, blk D, elev 3629 ft, pay 4835-5048 ft, used 7000 gals acid flowed 285 bbls initial; L. N. Claywater 1, c nw nw sec 638, blk D, elev 3659 ft, top anhydrite 2160 ft, top Yates 2900 ft, used 2000 gals acid in saturated lime 5220-64 ft, re-used 5000 gals acid at 5264 ft, dd to water at 5353 ft, dry and abd. Shell's Geo. Baumgart 1-D, SWc sec 826, blk D, elev 3562 ft, top anhydrite 2240 ft, dr 4610 ft; Baumgart 1-C, ne¼ sec 866, blk D, elev 3580 ft, top anhydrite 2238 ft, top Yates 3030 ft, top brown lime 4000 ft, top solid lime 4470 ft, pay 4840-5018 ft, shot 600 qts nitro 4810-5018 ft, used 5000 gals acid, flowed 435 bbls initial; Ruth Bennett 2, sw se ne sec 677, dr 5000 ft; Dora Roberts 1, nw nw se sec 793, cem sur pipe; C. A. Dowden 1, NEc nw sec 894, rur; F. W. Hensley 1, SWc ne sec 767, dr 1500 ft. Sun Oil Co.'s J. H. Lynn 2, c sw nw sec 798 ft, blk D, cem 10¾-in pipe 307 ft. The Texas Co.'s N. W. Willard 3, c se sw sec 799, blk D, elev 3607 ft, 7-in 4750 ft, dr 4775 ft; Ruth Bennett 1, SWc se sec 631, blk D, elev 3570 ft, dr 4660 ft. T. P. Coal & Oil Co.'s Ruth Bennett 5, near SWc nw sec 678, blk D, elev —— ft, pay 5085-5278 ft, shot 770 qts nitro flowed 1460 bbls initial; Bennett 6, near c n½ nw sec 678, dr 4665 ft; Bennett 7, near c n½ ne sec 678, rur. Toddie L. Wynne, Tr.'s Fairman 1, c se ne sec 797, blk D, elev 3627 ft, top anhydrite 2160 ft, pay 4850-5070 ft, used 4000 gals acid, flowed 262 bbls initial; Fairman 2, lcn; Fairman 3, lcn; Fairman 4, dk; N. W. Willard 2, NWc PSL sec 38, blk AX, top anhydrite 2085 ft, dr 4895 ft; Willard 3, lcn; Willard 4, sd 160 ft.

EAST TEXAS

BOWIE COUNTY—King Oil Corp.'s Nanny Watts 1 (12-ac), G. Brinbee sur, 4 mi w Texarkana, elev 374 ft, dr shale 3975 ft.

CHEROKEE COUNTY — Bunn Drl. Co.-John G. Mayo et al's J. H. Bowling 1, W. H. Walters sur, 2 mi se Lone Star, elev 349 ft, Pecan chalk 3620-3951 ft, dry and abd in shale 4071 ft. Lide, Greer and American Liberty Oil Co.'s S. L. Tankersley 1 (40-ac), Jose Pineda sur, Ironton, elev 575 ft, Pecan chalk 3672-4090 ft, top broken Austin chalk 4675 ft, top hard chalk 4690-4876 ft, top Woodbine 4980-5062 ft, dry and abd. Merica Oil Co.-W. L. Stone's New Birmingham Dev. Co.-Shell 1 (80-ac), Levi Jordan sur, Rusk pool, lcn.

DALLAS COUNTY—Mauldin Oil Co.'s W. E. Howell 1 (107-ac), S. Layton sur, 8 mi e Grapevine, sd 1508 ft. Plaza Oil Co.-W. A. Brooks, Jr.'s B. J. Davidson 1 (75-ac), John D. Merchant sur, dr 1975 ft.

DELTA COUNTY—O. W. Killam et al's Delta Farming Assn. 1, J. Dollahite sur, 4 mi ne Sulphur Bluff, elev 348 ft, top Woodbine 2712 ft, sd 2920 ft.

FRANKLIN COUNTY—Ajo Oil Corp. et al

(was Chenault's) T. J. Sanders 1 (4-ac), C. Payne sur, Talco sub-Trinity test, elev 371 ft, Pecan chalk 1602-1920 ft, top Woodbine red beds 3635 ft, top Georgetown lime 4012 ft, cut fault 4575 ft, top first Glen Rose 4803 ft, top anhydrite 5143 ft, massive anhydrite 5248-5386 ft, tested 3500 ft salt w 5456-75 ft, top Travis Peak 5810 ft, td 5904 ft, sd. H. W. McGee, L. S. Harper & White's L. S. Harper 1, W. N. Dawson sur, 6 mi sw Hagansport, elev 377 ft, dr 3440 ft.

GREGG COUNTY—Humble & Gulf's E. D. Robertson 1 (11.4-ac), M. Mann sur, 2½ mi w by s Longview, 4 mi e production, elev 272 ft, Austin chalk 3202-3341 ft, top Georgetown 3341 ft, top Paluxy 4541 ft, first Glen Rose 4876 ft, top anhydrite stringer 5617 ft, massive anhydrite 6214-6532 ft, top Travis Peak 7325 ft, dr hard sand 9110 ft.

HENDERSON COUNTY—Jones & Mallory's Russom Mallory 1, T. S. Mitchell sur, 6 mi sw Mabank, elev 304 ft, cem sur cas. E. B. LaRue et al's Breedlove-Mills 1 (232½-ac), J. Dunn sur, 5 mi nw LaRue, elev 485 ft, Pecan chalk 1906-1970 ft, Austin chalk 2635-2960 ft, top Woodbine 3062-3103 ft, salt water, dry and abd. DeArman, McMillan & Hunt's J. M. Dowdy 2, Geo. Hancock sur No. 7, Flag Lake area, elev 356 ft, Pecan chalk 1800-44 ft, top Austin chalk 2520 ft, td 3091½ ft, flowed 409 bbls 24 hrs, 3/16-inch choke. S. B. Howard-Frank Buttram et al's T. C. Self 1 (135-ac), F. Brown sur, 3 mi sw Athens, rig.

HOUSTON COUNTY—Humble O&R Co.-Sun Oil Co.'s H. H. Dailey 1 (1000-ac), J. L. Reviere sur, 3½ mi se Navarro Crossing, elev 264 ft, Pecan chalk 4272-4551 ft, top Austin chalk 5283 ft, td 5396 ft, lost stem, sidetracking. Peyton Bros. et al's J. P. Daniels 1 (100-ac), Juan M. Procella sur No. 70, ½ mi n Percilla, dr 3350 ft.

LAMAR COUNTY—Cooper Bros. et al's L. B. Hayes 1, Luke Roberts sur, 1½ mi w Deport, elev 410 ft, sd 275 ft.

LEON COUNTY—Lone Star Gas Co.'s Sara Melasky 1 (81.98-ac), M. C. Lee sur No. 500, Buffalo area, elev 399 ft, Pecan chalk 3988-4128 ft, Austin chalk 4925-5275 ft, top Woodbine series 5515-25 ft, 3 sands between 5634-5828 ft, gun-perforated pipe 5630-36 and 5640-70 ft, showing for big gasser with distillate.

LIMESTONE COUNTY—J. S. Cosden, Jr. et al's J. J. Bower 1 (15-ac), J. Breeding sur, near Prairie-Hill, sd 460 ft. Peyton Bros. et al's Steubenrauch 1, Mexia field Trinity test, lcn. Stanolind & Ramsey Pet. Corp.'s T. Norris 1 (40-ac), K. Thrasher sur, 5 mi n Kosse and on Thornton fault, elev 528 ft, Austin chalk 2791-2890 ft, top Woodbine 2980 ft, top Georgetown 3255 ft, first Glen Rose 4026 ft, top first anhydrite 4886 ft, top Pettit 5375 ft, top Travis Peak 5528 ft, top lower Marine 7595 ft, Marine lime 8525-8995 ft, salt 8995-9785 ft, anhydrite 9785-9845 ft, conglomerate 9845-88 ft, red sand 9888-9932 ft, chert-gravel 9932-50 ft, anhydrite 9950-51½ ft, td pb to test upper zones.

NAVARRO COUNTY—Natural Pet. Co.'s Karen Brown 1 (309-ac), W. T. Turner sur, 2 mi e Roane, elev 433 ft, dry and abd 1717 ft. Judge G. W. Gibson et al's J. H. Edgar 1 (30-ac), M. Meazel sur, 2½ mi s Richland, rig. L. B. Orchard & A. G. W. Biddle's Guy M. Gibson 1, Isaac Bird sur No. 80, 6 mi sw Rural Shade, elev 307 ft, top Pecan chalk 2080 ft, Austin chalk 2950-3320 ft, top Woodbine 3704 ft, td in w s 3809 ft, dry and abd. Mrs. Jane Robinson et al's Fortson 1, Eli Smith sur, 5 mi ne Corsicana, elev 345 ft, Austin chalk 1346-1585 ft, top Woodbine 2185 ft, dr 2455 ft.

SMITH COUNTY—John G. Mayo, Housh & Thompson. Inc.'s J. B. Mayfield 1 (130-ac), Wm. Keys sur, 4 mi se Tyler, Pecan chalk 3439-3827 ft, top Austin chalk 4465 ft, dr Eagleford shale 4925 ft. H. L. Hunt Unit Group's S. H. Bradley (100-ac), Thos. P. Payne sur A-763, Chapel Hill area, lower Trinity test, top Pecan 2807 ft, dr 2880 ft. R. L. Peveto, Ray Pruitt et al's T. J. Ingram 1 (200-ac), John Hope sur, A-443, 5 mi s Tylyer, lcn.

TITUS COUNTY—Lee Umbemhour et al's J. M. Sikes 1 (200-ac), Joseph Matthews sur, 1 mi n Winfield, elev 385 ft, cem sur pipe.

UPSHUR COUNTY—Tom Hunter-American Liberty Oil Co. et al's Dr. Chas. Carter 1 (80-ac), J. H. Fields sur, 1½ mi n Kelsey, elev 428 ft, Pecan chalk 2250-2690 ft, Austin chalk 3295-3332 ft, top Red Beds 5085 ft, top Paluxy 5590 ft, top anhydrite stringer 5978 ft, massive anhydrite 6520-6756 ft, basal anhydrite 6786-6826 ft, top 2nd Glen Rose 6826 ft, top Pettit 7405 ft, top Travis Peak 7525 ft, sd 7933 ft.

EAST TEXAS BORDER COUNTIES

CASS COUNTY—V. A. Hughes & Co.'s Lyster 1, Wm. Bateman sur, top Georgetown 4420 ft, set 5½ in csg 4345 ft, claim sg in Paluxy at 4350 ft, swabbed dry, arr pb to 4058 ft, td 4463 ft. G. H. Chamblee's White & Walker Lbr. Co. 1, J. J. Potter sur (280-ac), dr 5460 ft.

HARRISON COUNTY—Ark. Fuel Oil Co.'s C. M. Abmey 1, Eason Little sur, co hole to deepen, td 4820 ft (Glen Rose).

PANOLA COUNTY—Preston et al's Rushing 1, Mannan Smith sur, sd with fsg job 3276 ft. Texas Co.'s Claude Adams 1, Thos. Cox sur, 13⅜ in csg 579 ft, 9⅝ in csg 5940 ft, woc, td 6005 ft.

SHELBY COUNTY—Joe Burnham et al's George 1, C. C. Tutt sur, top chalk 2430 ft, dr 3455 ft. C. L. Cope's Pickering Lbr. Co. 1, English sur, rur.

TEXAS GULF COAST

BRAZORIA COUNTY—Sam Dunnam's Settegast 1, Pearland area, T. J. Green sur, dr shale 2668 ft. Albert Plummer's Street 1, Pearland area, D. Hunter sur, dr sand 6250 ft. Pure's State Prison Farms 1, Peach Point area, S. F. Austin sur, fsh 6515 ft. Luther C. Smith's Smith Fee 1, Flag Pond prospect, P. A. Rogers sur, lcn.

CHAMBERS COUNTY—A. A. Cameron's White 1, Canada Ranch prospect, S. Brill sur, ru. Laverne Decker's Broussard Trust 1, Double Gum Bayou area, H. & T. C. Section 30, dr shale 6698 ft.

GALVESTON COUNTY — Sun Oil Co.'s Cade & Co. 1, Boliver prospect, A. Dickson sur, driving piling.

GRIMES COUNTY—Hubert & Holt et al's Greer 1, Carlos area, P. B. O'Conner sur, dr shale 2834 ft.

JEFFERSON COUNTY — I. E. Harwell's State 1, Gulf of Mexico, Block 72, dr shale 5596 ft. Humble's McFaddin-State 1, Gulf of Mexico, tract 8, mim.

HARRIS COUNTY — O. W. Killman's Sweeny Estate 1, e of Ogburn, G. Williams sur, dr plug 1050 ft.

MATAGORDA COUNTY—Superior Drilling Co.'s P. Kruger 1, north of Van Vleck, C. Warren sur, pb 6350 ft. Sun's Robbins 1, north of Citrus Grove, C. H. Vandeveer sur, preparing to work over.

WHARTON COUNTY—Cockburn & Hargrove's Hudgins 1, Hungerford area, M. Muldoon sur, dr sand 5717 ft.

UTAH

CLARK COUNTY—Commonwealth Oil Co.'s Government 1, ne ne sw 31-21s-60e, fsg 1412 ft.

SUMMITT COUNTY—Longwall Petroleum Co.'s Fee 1, se sw se 35-3n-5e, dr 2685 ft.

WYOMING

ALBANY COUNTY—Italo Petroleum Corp.'s Tunney-Bragg 1, ne se nw 11-26n-81w, dr 1403 ft.

BIG HORN COUNTY—Prescott & Milleski's Government 1, ne nw sw 1-51n-93w, dr 290 ft. Big Horn Petroleum Trust's Parker 1, csw sw 23-49n-89w, dr 1510 ft.

FREMONT COUNTY—Stanolind Oil & Gas Co.'s Johnson 1, cse se 3-33n-96w, dr 8171 ft, Dakota.

HOT SPRINGS COUNTY—J. W. Bales' Government 1, w se sw 24-43n-93w, pb 1085 ft to 1025 ft, so 901 to 1025 ft, may acidize in Madison.

NATRONA COUNTY—General Petroleum Corporation's Government 1, cnw se 21-35n-77w, swabbing tubing, so 6680-95 ft, 6740-6840 ft.

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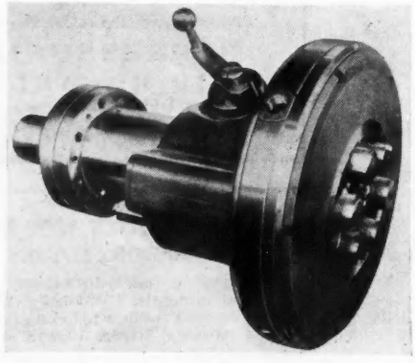
RECEDING CHASER COLLAPSIBLE TAP
Landis Machine Company

Landis Machine Company, Waynesboro, Pennsylvania, has developed a new receding chaser collapsible tap which employs a circular chaser. This tap, known as style CBLM, was designed for production tapping of line pipe, casing, and drill pipe couplings in tube mills. It can be used for tapping couplings made from seamless (grade C or D) or welded or wrought iron.

In operation, the tap is expanded by a short movement of the crank handle, operating through a rack and pinion, to bring the tripping ring into contact with the face of the coupling, and thus bringing into operation the receding mechanism as the tap is fed into the coupling. The crank handle controls the manual movements of the housing and is fitted with a latch so that the housing and trip ring can be moved back and locked out of the way to provide access for replacing the chaser slides. Adjustment is provided for thread length so that the tap collapses automatically at any predetermined length. The tripping ring is of the reservoir type with provision for directing a flow of lubricant directly over each chaser.



Landis "CBLM" receding circular chaser collapsible tap

The major working parts of the tap body are made of especially selected steels, hardened or case carburized and precision ground. The tripping mechanism of this tap is positive, with a large wearing area so that there is no appreciable wear after a long period of use. The tap is free from slots or openings through which chips or dirt could enter and interfere with its operation.

A positive adjusting feature, which is self-locking to maintain accurate size is provided in this tap. Means are provded to make any predetermined amount of adjustment for size. Changing chasers in the head will not appreciably effect size.

The chasers when mounted on their slides, can be rotated to bring the cutting edge into any desired position with respect to the center. This makes it possible to adjust the cutting clearance as may be required for the nature of the material being cut.

POWER EXCAVATOR
Bucyrus-Erie Company

Bucyrus-Erie Company, South Milwaukee, Wisconsin, announces another modern power shovel, convertible to dragline, clamshell, crane or drag shovel. This new machine, known as the 29-B, is a 1-yard excavator embodying many of the new engineering features built into the recently announced 33-B, 1¼-yard shovel. In addition to these modern features, the 29-B incorporates several other engineering accomplishments.

The 29-B is equipped with the new speed-type cast V-front, welded dipper, strong, light, easy filling, quick dumping. The patented inserted, Beco tiger teeth are of long wearing, forged tool steel, quickly reversed, resharpened, or replaced. A simple, positive action power dipper trip is standard equipment. Reinforcing diaphragms are welded into light, all-welded boom. Strong, wide-spaced, outside handles hold the dipper firmly into digging. Extra large boom-point sheaves contribute to good digging angles and unusually long rope wear. These twin, full circle, live sheaves are 36 inches in diameter.

Other important features engineered into this machine include sturdy, single-shaft drive cats giving powerful traction, facilitating easy climbing with quick, accurate steering, and allowing short or gradual turns. Swing gears and transmission boom hoist and propel are enclosed and run in oil. All high-speed shafts operate on ball or roller bearings. A fast, worm-drive boom-hoist is standard equipment and a special independent high-speed power up and power down live-boom hoist is also available. Gasoline, Diesel, or electric power is delivered through a stranght-line transmission with gears enclosed and running in oil.

ROPE WRAPPING FOR OIL HOSE
The B. F. Goodrich Company

The B. F. Goodrich Company, Akron, Ohio, has developed a special rope designed for use as a protective wrapping on oil suction and discharge hose. It is of braided construction and has a wire core. Whereas ordinary rope unwinds when cut and has a tendency to stretch and bunch up, this new rope does neither. The wire core serves to hold the rope firmly in place on the hose, and even if several strands of the rope are cut, the wire prevents it from unbraiding or from unwinding from the hose.

Goodrich rope for wrapping is available in ⅜-inch diameter only.

PIPE PULLING AND PUSHING JACK
Duff-Norton Manufacturing Company

Duff-Norton Manufacturing Company, 2709 Preble Avenue, Pittsburgh, recently placed on the market a pipe-pulling and pushing jack.

Designed primarily for pulling and pushing without changing the position of the jack, this new geared-type unit represents one of the most powerful tools of its kind. It is capable of forcing pipe up to six inches in diameter. The tearing up of lawns, streets, highways or holding up of railroad traffic is obviated by its use.

The new Duff-Norton pipe pulling and pushing jack is an invaluable aid to oil companies, etc., and wherever iron or steel pipe, electrical conduit or lead cable must be laid.

WELL TREATMENT
W-K-M Company

W-K-M Company, Inc., Houston, Texas, now offers exclusively to the Gulf Coast, South Texas and Arkansas districts Mudsol well treating service.

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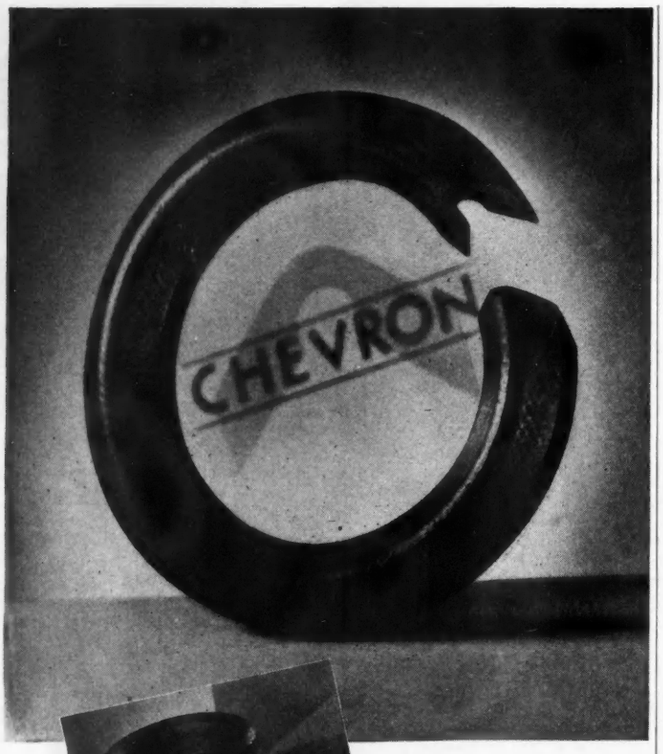

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CHEVRON PACKING is so constructed that it adjusts itself automatically to compensate for variations in pressure. The exclusive hinge-like, cross-sectional shape expands as the pressure increases and contracts as the pressure decreases. Friction on the rod and on the packing itself is thereby reduced to a minimum. The performance of GARLOCK Chevron is remarkably efficient and economical on all types of equipment and in many industries. It will cut your packing costs.

THE GARLOCK PACKING CO.
Palmyra, New York
Tulsa, Oklahoma Los Angeles, California
Houston, Texas

Garlock CHEVRON

tion, and provides for a natural entrance of all the oil in both old and new wells.

As proven in over 500 wells treated in the California territory, Mudsol materially increases the production when such obstructions exist. Many operators have recognized the value of treating new wells, many of which do not come in properly due to the sheath of rotary drilling mud which has penetrated the producing formation.

W-K-M has complete truck units with chemical tanks, pumps, etc., to apply Mudsol treatment, it not being necessary to pull screen.

TILE—GRAVEL SCREEN

C. J. Gibson

C. J. Gibson, 3576 Wilshire Boulevard, Los Angeles, is manufacturing "Poro Pack" for packing between liner and oil sand. Designed to replace gravel as is customarily used for this purpose, it is a marble-shaped tile with grooves in its circumference to increase porosity. Hardness, size and specific gravity can be controlled in manufacture. The tile is not affected by acid, water or heat.

DIESEL DRIVEN ARC WELDER

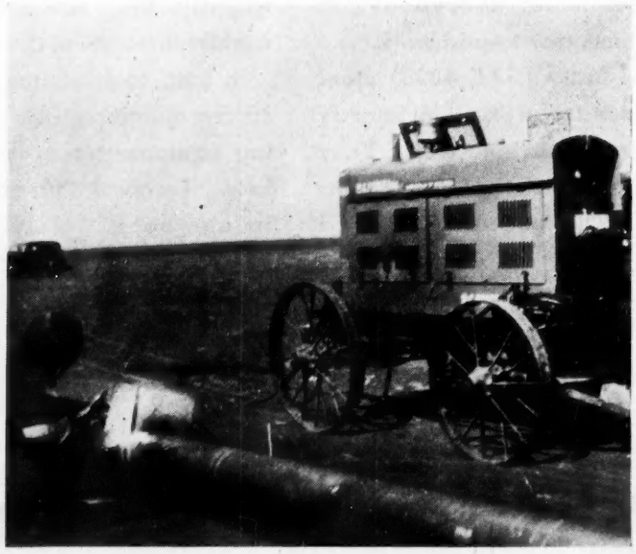
The Lincoln Electric Company

The Lincoln Electric Company, Cleveland, Ohio, recently adapted a new Diesel engine for driving arc-welding generators which differs radically from the popular conception of this type of power in that it compares favorably with gasoline engines in simplicity, weight and cost, as well as operating speed.

It is claimed that this welder cuts fuel costs 33 to 86 percent, depending upon the price of fuel oil used. For instance, at full load operation, it uses only 1.5 gallons of fuel oil per hour as compared to 2¾ gallons of gasoline per hour required for the conventional gasoline engine-driven welder. In many cases, total savings including such items as transportation of fuel, loss, etc., are as high as 40 cents per hour.

Maximum efficiency and service economy of the engine are assured by a new Diesel principle embodying patented combustion chambers. By accelerating turbulence of the fuel and air mixture, this scientific device affords more complete combustion, increasing efficiency, and minimizing smoke and noise. Also, the position of this combustion chamber, relative to the piston, provides uniformly distributed pressure on the piston.

Other engine features include: pintle type fuel nozzles which are non-clogging and non-enlarging, assuring positive and uniform action; five filters (three fuel oil filters, one oil type air filter and one lubricating oil filter) contribute to the efficiency and dependability of the engine; use of the required number of standard 6-volt automobile batteries for starting facilitates field service and replacement. Through a standard relay the exciter charges the batteries. The main welding generator is used to start the engine. The engine is an extremely compact unit without extras such as a starter motor, generator, special controls, etc.



Lincoln Diesel Engine-Driven Arc Welder

This Week with the Industry's EQUIPMENT SUPPLIERS

Chiksan Oil Tool Company Opens Gulf Coast Office

Chiksan Oil Tool Company, Fullerton, California, has opened an office in the Shell Building, Houston, under the management of Herb Maland, who has been the company's chief engineer for a number of years.

Thorough knowledge of the company's line and wide engineering experience enable Maland to make valuable recommendations for individual swing joint problems. He will devote the major portion of his time to promoting the use of joints for boats, docks, refineries, loading trucks and other low-pressure swing joint installations.

Powel Heads Westinghouse Industry Engineering

C. A. Powel, recently appointed manager, industry engineering department, Westinghouse Electric and Manufacturing Company, with headquarters at East Pittsburgh, Pa., has been associated with the company since 1919, was born in 1884 in Rouen, France. His parents were Welsh and he was educated in England and Switzerland. Graduated from the Instittue of Technology of Bern in 1905, he entered the application engineering department of Brown, Boveri & Company in Baden, Switzerland, the same year.

Six years later he was sent to Japan as resident engineer for that firm and remained there until 1915 when he returned to England and joined the civil branch of the ordnance department. Following the World War he moved to Pittsburgh and joined the Westinghouse Company. Previous to his recent appointment, he was manager central station engineering department.

Powel's participating activities of engineering societies have included a directorship and chairmanship of various committees of the American Institute of Electrical Engineers.

Marley Company Occupies New Office Building

The Marley Company, Kansas City, Kansas, recently occupied its new warehouse and office building recently completed in the Fairfax industrial district, 3001 Fairfax Road, Kansas City, Kansas.

The main building is 180 feet wide by 180 feet long with offices on the second floor, 40 feet wide by 180 feet long. The lot is 213 feet wide by 415 feet long. The building is modern in every respect, and fire-proof. It is equipped with an automatic sprinkler system and a modern heating and ventilating plant including 32 tons of air conditioning for the offices. There is a large storage yard and a railroad siding sufficient to load three cars at once.

Thiokol Corporation Moves Office and Laboratory

Thiokol Corporation, manufacturers of oil-proof synthetic rubber, announces that effective April 1, the general offices and laboratory of the company will be located at 870 North Clinton Avenue, Trenton, New Jersey. For seven years the company's plant and general offices have been situated in Yardville, N. J.

F. F. Carr District Manager for Chemical Process Company

F. F. Carr, formerly in the field service at Odessa, Texas, has been promoted to District Manager at Shreveport, Louisiana for Chemical Process Company of Breckenridge, Texas. Carr has been with the company for several years since graduating from Colorado School of Mines.

Roy Evans Joins Federal Motor Truck Company

Appointment of Roy Evans as assistant general sales manager of Federal Motor Truck Company, in charge of western territory, is announced by K. M. Schaefer, general sales manager.

Evans has a wide background of retail and wholesale truck sales experi-

Advantages of the
INFERNO Stainless
GAUGE COCK

Stainless steel body, which greatly reduces the possibility of twisting off in the boiler. Non-corrosive. All parts interchangeable. Large reversible seat disc deflects the steam and lasts indefinitely. Mounted on the end of the rotating handle (see illustration) so that "a twist of the wrist" provides a new seat. Non-leakable. Factory tested to 1000 lbs. Guaranteed. Standard equipment on one well known oil field boiler. Write for Bulletin No. 9.

Bulletin No. 9 gives further details.

THE INFERNO CO.

"Makers of Better Steam Equipment"

P. O. Box 1138 Shreveport, La.

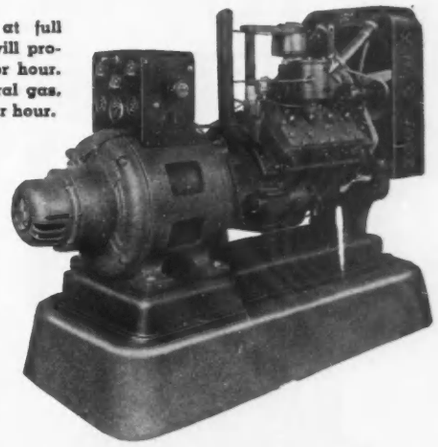
Have You Taken the Peace Pledge?
Write for Information.

KRW-FORD V8 ELECTRIC PLANT

This Unit, operating at full load on 10c gasoline will produce 20 KW for 45c per hour. Operating on 30c natural gas, 16 KW costs only 13c per hour.

PRODUCES BOTH 110 AND 220 VOLT CURRENT FOR LIGHT AND POWER

20,000 WATT CAPACITY
Operates at 1800 R.P.M.



Powered with brand new **Ford V-8 85 H.P.** engine, with light weight steel pistons and cast iron heads—Six-blade, 19" Fan with double belt drive—**Ford Air Filter** with crank case ventilator—**Battery, Starter, Generator—Temperature Gauge** and **Temperature Control** which breaks ignition circuit if water temperature exceeds 200 degrees—Bus size **Fram Oil Rectifier** saves 75% of lubrication costs, insures long engine life—Improved **Pierce Governor** with double "V" belt drive.

Generator is of special design and extremely efficient. Armature is perfectly balanced and runs on large, heavy duty, Ball Bearings—**Exciter** is built-in. (3 Phase, also DC if desired). Cast Aluminum **Instrument Panel** includes **Tachometer—Oil Pressure** and **Oil Temperature Gauges—Ignition Switch Lock**—Starter **Push Button**—Hand **Rheostat** for generator control.

For complete information, prices and data write us. You can buy through your local Ford Dealer and benefit by local service and low-cost Ford engine replacement feature.

K. R. WILSON, 20 Lock St., Buffalo, N. Y.

Builders of Shop Equipment for Ford Dealers Since 1916
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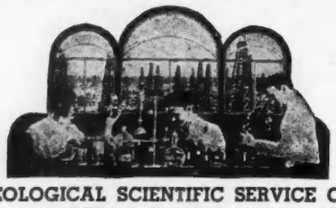
Standco
NO-SMOKE
STANDCO BRAKE LINING
Nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 1940, Composite Catalog.
STANDARD BRAKE LINING CO.

NABORS TRAILERS
PRICE REDUCTIONS
Lowest Base Prices in this Company's History
W. C. NABORS COMPANY
MANSFIELD, LA.
Houston Dallas Memphis
Jackson Montgomery

In Philadelphia, Pa. it's the
HOTEL PHILADELPHIAN
39th and Chestnut Sts.
600 ROOMS, each with BATH
Single, $2.75 — Double, $4.40
Coffee Shop, Cocktail Corner and Bar

GEOPHYSICAL SOIL SURVEYS
PERHAPS YOU SHOULD KNOW:
1. That more major concerns use this company's GEOPHYSICAL SERVICE for locating oil than perhaps any other one concern.
2. That although our mistakes are sometimes serious, yet:
3. We can accurately record structural accelerations 5 out of 6 times, and
4. Oil, possibly 6 out of 10 times.
5. By chemical analysis of surface soils.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(Calls accepted from anywhere on earth)

ence dating back to 1923. Most of the territory he is to handle for Federal is thoroughly familiar to him as his sales activities have centered in the Middle West and Southwest while serving as regional truck manager for the Chevrolet Motor Company.

Westinghouse Forms Three Industry Departments

Westinghouse Electric and Manufacturing Company has announced a realignment of the industrial department. Three new departments, industrial, resale and industry engineering have been formed to meet the changing conditions in industrial markets.

The new industrial department has a staff of field trained sales engineers each of whom has had broad experience with industry problems. The electrification of industries such as iron and steel, mining, chemical, petroleum and public works will be served by this department. C. B. Stainback, formerly assistant manager, will be manager.

The resale department will devote its facilities to servicing manufacturers whose products incorporate electrical equipment and other secondary distribution channels such as industrial agents and jobbers. However, those companies building equipment for a specific industry will remain the responsibility of the industrial department. Such activities as machinery electrification, appliance electrification, and construction industries and contractors will be included in the new department. Bernard Lester, also assistant manager of the former industrial department, becomes manager.

Backing up both departments with application engineers, the industry engineering department will provide a corps of engineers experienced in electrical problems of the several industries. In this capacity the department will have a true engineering approach to industry electrification and its engineers will be available for consultation and development work. Mr. C. A. Powel will be manager of the new department which will also embrace the activities of the Central Station Engineering Department previously headed by him.

These departments are all located at the company's East Pittsburgh, Pa. offices. Lester will have his headquarters at Pittsburgh.

Wallace H. Rowe, Jr., goes west for Pittsburgh Steel

Wallace H. Rowe, Jr., has been appointed district sales manager of the Los Angeles office of Pittsburgh Steel Company, and takes up his duties there April 1. Rowe, who is the son of the late Wallace H. Rowe, one of the founders of Pittsburgh Steel Company and its first president, has for a number of years been a sales representative for the company with headquarters at Pittsburgh. In his new capacity he will have charge of the Pacific Coast sales activities for all of the products of Pittsburgh Steel Company.

Dow Appointed On Michigan State Planning Commission

Willard H. Dow, Dow Chemical Company, Midland, has been appointed a member of the Michigan State Planning Commission by Governor Frank Murphy.

W. C. Norris Honored With Dinner on Anniversary

Employes of the W. C. Norris Manufacturing Company, Tulsa, were hosts to W. C. Norris, president of the concern, with a dinner at the Tulsa Club March 10, which marked the fifty-sixth anniversary of Norris in the oil and equipment business. He came to Tulsa in 1910 and started the manufacturing plant July 16 of that year. The following year he closed his plant in Tiona, Pennsylvania, and centered manufacturing in the Mid-Continent.

Members of the transportation committee of the tenth International Petroleum Exposition at Tulsa, held their first meeting and were the guest of the Tulsa Traffic Club, at the Mayo Hotel. Representatives of approximately 26 of the major transportation units of the United States were present to aid the committee in formulating plans to transport 10,000 pieces of equipment to be exhibited at the May 14 to 21 show and to plan passenger rates for the visitors. Above are the representatives of the airlines who met with A. F. Winn, chairman of the transportation committee, (at right). Left to right, they are: A. E. Hecker, T.W.A., Kansas City; B. B. Edwards, of Hanford Lines, of Tulsa; H. C. Duncan, of American Airlines, Tulsa; and W. G. Skelly, president of the exposition and the Skelly Oil Company of Tulsa.

Squeaks from the Bull Wheel

Empties!

William, how do you suppose those dozens and dozens of empty bottles got into the cellar?

I'm sure I don't know. I never bought an empty bottle in my life.

Customary

"The Weavers are so quiet tonight. Is any thing wrong?"

"No; they're always that way. When he proposed he just held out a diamond ring and said, "Eh?" and she looked at it and said, "Uh huh."

The Disguise

The newly-weds had just got off their train.

"John dear," said the bride, "let's try to make people think we've been married a long time."

"All right honey," was the answer, "you carry the suitcase."

Something in Common

A group of professional men had gathered in the lobby of a hotel and proceeded to make themselves known to one another.

"My name is Fortesque," said one, extending his hand. "I'm a painter—work in water colors chiefly."

"Indeed," remarked another. "I'm an artist, too. I work in bronze."

"Well, this is fine," chimed in a third. "I'm a sculptor. I work in stone."

Then the quiet little fellow who had been inclined to keep apart stepped up, a dry smile on his face.

"Glad to make the acquaintance of you gentlemen," he remarked, "for I have a common interest with you. I work in ivory. I'm a college professor."

Friends!

It happened at the Spring training camp of a major league baseball club.

"The umpire for today's game is at the gate with two friends. Shall I pass them in?" inquired the gatekeeper of the manager.

"An umpire with two friends!" gasped the manager when he could get his breath. "Sure."

Easy to Fix

"What are you doing now?"

"I have found a new circus turn—the friendship of a lion and a goat."

"But aren't there quarrels between them?"

"Oh, yes, they have their little quarrels, but then we buy a new goat."

Can't Do It

"Who was that lady I seen you outwit last night?"

"And what makes you think I can outwit a lady?"

Popular

"You'll have to see my secretary for an appointment."

"I did but she's booked up two weeks."

Let Him Carry It

"Yes, sir, Mrs. Smith is in. What name shall I say, sir?"

"Professor Zielaskowskiplinkiewisch."

"Och, sure, better go right in, yer honor, and take it wid ye."

A Fish Story

"Are the fish biting?"

"I don't know," replied the weary angler. "If they are, they're biting each other."

Tea-ing Off!

"More than 300 tons of sugar are wasted every year in the bottom of teacups," says a statistician. This announcement is expected to cause a great stir in Aberdeen.—Aberdeen Sunday Express (Scotland).

His Fault

"Willie, how dare you kick your little brother in the stomach?"

"It was his own fault. He turned around."

Probably Just That

The vicar was appealing to members of his congregation to supply refreshments for his church social.

"And now, please remember," he ended, "what we want are not abstract promises, but concrete cakes."

Grief

A traveling circus had arrived at a small village, and the vicar paid a visit to the encampment to see if he could be of service. He came across three circus hands sitting silent and very dejected.

"What's wrong?" asked the vicar.

"The elephant's dead," volunteered one of the men.

"Dear, dear," said the parson, "I am sorry. But at the same time I am glad to think that you three men cared so much for a dumb animal."

"Oh, 'tain't that," explained one of the three. "You see, us chaps has got to dig the hole to bury him."

Farmers Go To Town

Farmers are going to town in more ways than one, using six-cylinder, gasoline-fueled tractors that can plow 83 percent more acreage than the old kerosine-burners, bring in market reports on their radios, and do 25 miles an hour on the highway.

Visitors at farm shows mistake the streamlined tractors for new type cars, what with the rubber tires, five speeds, radios, self-starters, spotlights, and comfortable seat.

It is estimated that a million and a half tractors helped with the crops in 1936. More help is expected hereafter for farmers have shown a decided liking for the speed and economy of the new models.

GOLDEN ANNIVERSARY

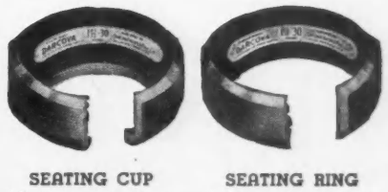
MEETING YOUR PROBLEMS FOR FIFTY YEARS

A half-century of experience in all phases of the industry! That's why oil men depend on Darling Valve cups to do a better job!

DARCOVA (Orange Label) the standard for over thirty years under severe service at all depths.

DARVAL (Blue Label) for service in wells to approximately 2000 feet in depth.

DARFLEX (Green Label) the popular favorite for wells to 800 feet in depth.



SEATING CUP (Cut away to show section)

SEATING RING (Cut away to show section)

Our Seating Cups and Rings are made from the same fine materials —and by the same careful methods —as Darcova, Darval or Darflex Valve Cups. Available in "Regular", "+15", and "+30" sizes.

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Williamsport, Pa.

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Thermoid Rubber Co.	—
Thornhill-Craver Co.	—
Thornton Tandem Co.	—
The Timken Roller Bearing Co.	—
The Titusville Iron Works Co.	—
Tretolite Co.	37
Trimont Manufacturing Co.	—
Trinity Portland Cement Co.	—
Twin Disc Clutch Co.	—
Union Carbide & Carbon Corp.	—
Union Wire Rope Co.	—
Unit Rig & Equipment Co.	—
United Gas System	—
United States Rubber Co.	—
United States Steel Corp.	—
United Supply & Manufacturing Co.	—
Universal Atlas Cement Co.	—
Wailes Dove-Hermiston Corp.	—
Warner & Swasey Co.	—
The Watson-Stillman Co.	—
Waukesha Motor Co.	—
Well Equipment Manufacturing Co.	—
Westinghouse Electric & Mfg. Co.	—
Wheeling Steel Corp.	—
Wheeling Machine Products Co.	—
The Wheland Co.	—
Wickwire Spencer Steel Co.	—
J. H. Williams & Co.	—
K. R. Wilson	95
Wilson Manufacturing Co.	—
Wilson Supply Co.	—
W-K-M Co.	53
The Wood Shovel & Tool Co.	—
Worthington Pump & Machinery Corp.	6
Young Engine Corp.	—
Young Radiator Corp.	—
Youngstown Sheet & Tube Co.	—
Zingery Oil Map Co.	91